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Planning for a Healthier Birth and Beyond: Strategies Women Use to Manage Gestational Diabetes

Lois C. Hamel

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**PLANNING FOR A HEALTHIER BIRTH AND BEYOND:
STRATEGIES WOMEN USE TO MANAGE
GESTATIONAL DIABETES**

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A THESIS

Submitted in Partial Fulfillment of the

Requirements for the Degree of

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(Individualized in Adult Health Education)

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The University of Maine

August, 2003

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Thesis Advisor: Dr. Mary Ellen Symanski

An Abstract of the Thesis Presented
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Gestational diabetes, the most frequent pregnancy complication in the United States, puts mother and infant at risk for serious medical problems that can have lifelong sequelae. Maternal glucose control is crucial to a successful pregnancy outcome and often requires the mother to follow a strict medical regimen. Authors of previous studies have described the experience of gestational diabetes as stressful, overwhelming, and anxiety producing; and an association between maternal stress and glucose control has been documented. Authors of nursing studies have found that repeating information and providing support are essential when working with gestational diabetes patients, whose learning ability is reduced by stress. However, few studies have examined how women perceive the experience of gestational diabetes, and understanding the patient's perception of a stressor is essential for effective nursing intervention. Using grounded theory methodology, this study generated an emerging nursing theory, *planning for a healthier birth and beyond*, that provides a framework in which to interpret the strategies women use to manage a pregnancy complicated by gestational diabetes. The findings

could provide nurse clinicians and researchers with a richer understanding of how women experience gestational diabetes, and potentially serve as a basis for developing proactive nursing interventions to improve treatment adherence and better help women manage their lives with the condition.

DEDICATION

I dedicate this work to Dennis, my loving husband of 15 years; to our families; and to my mother, who died of amyotrophic lateral sclerosis before this work was completed.

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I would like to express my deep gratitude to the participants in both the pilot and dissertation studies. This research will be, most of all, for the women diagnosed with gestational diabetes.

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Chapter 1

INTRODUCTION

Gestational diabetes is a carbohydrate metabolism disorder seen in pregnant women (American Academy of Pediatrics [AAP], 2002; Expert Committee, 2003). It puts both mother and infant at risk for serious medical problems that can have lifelong sequelae, and a mother's adherence to an often-strict treatment regimen helps to achieve a successful outcome for her high-risk pregnancy (AAP, 2002; Metzger & Coustan, 1998; Persily, 1996). Yet even though women with gestational diabetes are often highly motivated to do what is best for their unborn children they are not always able to follow the regimen prescribed, for reasons that are not completely understood (Habboushe, 2000; York, Brown, Armstrong, Persily, & Jacobsen, 1996; Zigrossi & Riga-Ziegler, 1986).

Little is known about the thoughts, feelings, or day-to-day challenges women diagnosed with gestational diabetes actually experience, or what factors influence their coping strategies. The condition's physical effects on the mother and on the infant have been well documented, but the psychological and sociological impact on the mother have not, and there is recognition of a need for new research to assess the thoughts, feelings, and day-to-day challenges women diagnosed with gestational diabetes experience (Chazotte, Comerford Freda, Elovitz, & Youchah, 1995; Nichol, Cleave, Seto, & Poulos, 1993; Ruggiero, Spirito, Bond, Coustan, & McGarvey, 1990; York et al., 1996).

Research Questions

The purpose of the research was to generate a theory that best describes how women cope with having gestational diabetes, based on their own descriptions and interpretations of the experience. The specific questions to be answered were, “How does a woman cope with gestational diabetes?” and “What coping strategies are used by women diagnosed with gestational diabetes?”

Specific Aims

The study was conducted using grounded theory methodology to explore and interpret the coping strategies used by women diagnosed with gestational diabetes. The intention of the research was to provide nurse clinicians and researchers with new and meaningful knowledge about the complex experience of gestational diabetes and the ways in which women cope with that experience. Such knowledge could potentially serve as a basis for the development of nursing interventions that would better help women with gestational diabetes manage their lives with the condition. Dissemination of the research findings will also potentially give study participants an opportunity to share valuable information with other women diagnosed with gestational diabetes and with health care providers.

Significance of the Problem

Heightened feelings of vulnerability are considered normal for a woman with a newly diagnosed pregnancy, which may be labeled a “maturational or developmental crisis” (Clark & Affonso, 1976; Sheehy, 1977). Crisis, as described by Caplan (1964) and Aguilera (1990), is a disturbance caused by a stressful event or a perceived threat to self. Ambivalence associated with becoming pregnant is often displayed by thoughts and feelings surrounding the task of accepting the pregnancy, the task of becoming a parent, or both (Lederman, 1984; Lowdermilk, Perry, & Bobak, 2000). In addition to the feelings of vulnerability and ambivalence experienced in a normal pregnancy, a pregnancy complicated by a high-risk diagnosis can be accompanied by feelings of uncertainty, fear, anger, and loss of control. A high-risk pregnancy is considered a situational crisis that affects a woman’s psychological and physiological functioning and relationships with others (Aguilera, 1998; Caplan & Caplan, 2000; Danielson, Hamel-Bissell, & Winstead-Fry, 1993; Rotondo, 1990).

One such high-risk pregnancy diagnosis is gestational diabetes (American Diabetes Association [ADA], 2003; Metzger & Coustan, 1998). Gestational diabetes is defined as any degree of glucose intolerance, i.e., abnormal blood sugar level, with onset or first recognition during pregnancy (ADA, 2003; Metzger & Coustan, 1998). Each year gestational diabetes is diagnosed in approximately 200,000 women, complicating about 7% of all pregnancies (ADA, 2003). The prevalence varies with different screening and diagnostic criteria, and among populations; in high-risk racial and ethnic groups, gestational diabetes may occur in up to 14% of pregnancies (Expert Committee, 2003).

The mother with gestational diabetes is at increased risk for high blood pressure disorders and cesarean delivery, and the fetus is at increased risk for birth trauma, preterm delivery, and even perinatal death (AAP, 2002; Expert Committee, 2003; York & Brown, 1995). The internationally accepted definition of perinatal death is any fetal death occurring after 28 weeks gestation, or of a fetus weighing greater than two pounds, through the first 28 days of life (AAP, 2002; Cunningham et al., 1997; Longe et al., 2002). After delivery, mother and child face longer-term consequences. The mother is at increased risk for developing cardiovascular disease and diabetes, generally type 2, later in life (Davis, 1997; Tamas & Kerenyl, 2001). The child is at increased risk for obesity, glucose intolerance, neurological deficits, and diabetes (ADA, 2003; Doherty & Hepper, 2000; Ornoy, Ratzon, Greenbaum, Wolf, & Dulitzky, 2001; Rizzo et al., 1995).

Because a high blood glucose level in the mother has been linked to increased risks for mother and infant, achieving a normal glucose level is crucial for women diagnosed with gestational diabetes (ADA, 2003; York et al., 1996). Glucose control cannot be achieved solely through the efforts of the medical team, however; gestational diabetes is a condition that requires the patient to take an active role in her own treatment (AAP, 2002; Persily, Brown & York, 1996). Assessment and treatment of the patient's emotional state prior to delivery are thus extremely important (Persily, 1996). Nursing interventions must focus not only on reducing psychological distress and preparing the patient to cope with upcoming situations, but also on optimizing the patient's learning about treatment requirements (Rotondo, 1990). Interventions that facilitate not only learning about treatment, but also adhering to treatment, are especially important (Keohane & Lacey, 1991).

For reasons that are not clearly understood, some patients adhere to treatment for controlling their glucose level whereas others do not (Persily, 1996). It has been well documented that patient anxiety levels have an inverse relationship to glucose control, either directly, through hormonal effects, or indirectly, through nonadherence to the medical regimen (Rosas & Constantino, 1992; Schroeder-Zwelling & Hoch, 1986; Zigrossi & Riga-Ziegler, 1986). However, a thorough assessment of the psychosocial factors influencing nonadherence during or after pregnancy has not been conducted.

Chapter 2

REVIEW OF THE LITERATURE

In this chapter, I provide a brief review of the physical and psychological effects of so-called normal pregnancy, followed by a definition of high-risk pregnancy with a description of the psychological effects. I review clinical research on the physiological effects of gestational diabetes and the research on stress and coping, including the effects of stress on glucose level. Relevant gaps in the literature are also identified.

Next, the process of developing my research focus is chronicled. Grounded theory methodology and the philosophy that informs it are described. Finally, I discuss the relevance of my study to nursing research and feminist inquiry.

“Normal” Pregnancy

A medical definition of normal pregnancy is “the gestational process, comprising the growth and development within a woman of a new individual from conception through embryonic and fetal period to birth” (Mosby’s Medical, Nursing, & Allied Health Dictionary, 2002). I chose this definition after a review that included *Van Nostrand’s Scientific Encyclopedia* (Considine & Kulik, 2002) and *Medicine of the Fetus*

and the Mother (Reece & Hobbins, 1999), because it is more “human” and less biomedical, and thus seems particularly appropriate to nursing science.

Because of the variation in pregnancy symptoms, a “normal” pregnancy diagnosis is characterized by a number of physical and emotional signs. Early in the pregnancy these include amenorrhea, nausea and vomiting, breast changes, urinary frequency, lack of energy, weight gain, mood swings, various types of uterine and cervical softening, higher basal body temperature, skin pigmentation changes, an enlarging abdomen, and a positive pregnancy test by urine or blood. Later in the pregnancy, uterine enlargement, increased circulation to the uterus, and detectable fetal heart rate and ultrasounds are more obvious signs (Lowdermilk et al., 2000).

Typically, women’s initial emotional or psychological responses to pregnancy are ambivalent. It has been documented that once the diagnosis is confirmed, women often pass through stages of shock, disbelief, joy, and dismay while wondering if “now” is the best time to be pregnant (Lederman, 1984/1996; Mercer, 1995; Rubin, 1975, 1984).

Later in the pregnancy, women accept that there is a child growing within them. This phase often coincides with the middle part of the pregnancy, when fewer physical discomforts are noted, and women often become more introspective and quiet, thinking about their responsibility toward the fetus. Women form an emotional attachment to their unborn child, and researchers have found that such attachments are formed sooner in planned than in unplanned pregnancies (Ainsworth, 1973; Brazelton, 1982; Lederman, 1984/1996; Mercer, 1995; Rubin, 1975, 1984).

In the last phase of pregnancy women prepare themselves, their homes, and their lives for motherhood. Scholars continue to examine the relationship of the unborn child

and its mother in this final phase of pregnancy to measure attachment behaviors (Levy-Shiff, Lerman, Har-Even, & Hod, 2002). Attachment, or bonding—the affectionate tie of one person for another—is essential for infant survival. The quality of this emotional connection has been correlated with the child’s cognitive and emotional, as well as physical, development (Ainsworth, 1973; Brazelton, 1982).

In general, women are capable of childbearing from their teens into their midforties. At any age, normal pregnancy is considered a maturational crisis, as it requires the mother to master certain developmental tasks in order to make the transition from relative independence to complete commitment to another human being. These tasks include accepting the pregnancy; identifying and preparing for the role of mother; preparing for birthing; reorganizing life at work and at home to accommodate a newborn’s demands; forming an attachment to the unborn child; and coming to terms with one’s own mother-daughter relationship and how this pregnancy may affect it (Clark & Affonso, 1976; Lederman, 1984/1996; Lowdermilk et al., 2000; Mercer, 1995; Rubin, 1975, 1984). Thus, normal pregnancy is considered a maturational crisis because of all the adjustments, physical and emotional, that a woman or couple is forced to manage.

High-Risk Pregnancy

A high-risk pregnancy becomes a situational crisis for the mother or couple (Aguilera, 1998; Caplan, 1964; Caplan & Caplan, 2000; Danielson, Hamel-Bissell, & Winstead-Fry, 1993; Rotondo, 1990). The mother must learn about the diagnosis, reflect

on what it means to her based on her past experiences, and learn what she needs to do to manage her pregnancy safely (Persily, 1996).

A high-risk pregnancy is one in which the health or very life of the mother or the infant is jeopardized because of a disorder concurrent with or unique to the pregnancy. (AAP, 2002; Longe et al., 2002; Lowdermilk et al., 2000). Complications that define a pregnancy as high risk include gestational diabetes, multiple gestation, placenta previa, pregnancy-induced high blood pressure, preterm labor, and pyelonephritis (AAP, 2002; Lowdermilk et al. 2000).

With the diagnosis of gestational diabetes, many women have reported feeling “stressed,” “overwhelmed,” “fearful,” “anxious,” “frustrated,” “guilty,” “out of control,” or “angry” (Ahlens & Ahlers, 1991; Rosas & Constantino, 1992; Rotondo, 1990; Rotondo & Coustan, 1993; Thomas-Dobersen, Saliman, & Dobersen, 1993). Penticuff (1982) suggested that when a pregnancy becomes high risk, the family fears either a maternal or fetal loss, and the mother’s ability to work through the normal developmental tasks can be inhibited.

Gestational Diabetes

Definition and Prevalence

Gestational diabetes mellitus is a carbohydrate metabolism disorder that first appears during pregnancy. The definition applies regardless of whether the mother continues to be diabetic after pregnancy or requires any insulin during pregnancy (Expert

Committee, 2003). In the United States, the condition is most common among Hispanic Americans, African Americans, Asian Americans, Native Americans, and Pacific Islanders, occurring in up to 14% of pregnancies (Expert Committee). According to the American College of Obstetricians and Gynecologists (ACOG), gestational diabetes is so prevalent in some Native American populations that pregnant women are automatically considered to have a positive screen and may proceed directly to diagnostic testing (AAP, 2002; ACOG, 1994; Expert Committee, 2003). Proactive educational and supportive nursing interventions may be especially important for women in these high-risk populations, who often have fewer resources for taking care of themselves and their unborn children than women in lower risk populations (York & Brown, 1995).

Women who have the greatest chance of being affected are those who have a family history, are obese, and are over 30 years old, but gestational diabetes can occur in any woman and typically cannot be prevented (Expert Committee, 2003). For women with gestational diabetes in one pregnancy, a 38% to 66% increased chance of a subsequent diagnosis in a later pregnancy has been reported (Coustan, 1991; Tamas, Kerenyl, 2001). In addition, depending on the diagnostic criteria used, as many as 70% of women who have had gestational diabetes will be diagnosed with diabetes later in life, with obese women at greatest risk for developing lifelong diabetes (ADA, 2001; Coustan & Carpenter, 1985; Coustan, Carpenter, O'Sullivan, & Carr, 1993; Kjos et al., 1990; Metzger, Cho, Roston, & Radvany, 1993; Metzger & Coustan, 1998; O'Sullivan, 1991). According to Metzger and Coustan (Expert Committee, 2003), participants in the Fourth International Workshop-Conference on Gestational Diabetes Mellitus, the most recent such conference, recommended that women with the diagnosis begin lifestyle

modification programs to achieve and maintain optimum weight in an effort to reduce later diagnoses of diabetes. The authors noted, however, that there have been no prospective trials looking at the efficacy of such a lifestyle modification. Five years before, the ADA had made the recommendation that after delivery, a woman with gestational diabetes should strive to be “lean and fit, which decreases the chances from 60% to 25% that she will develop type 2 diabetes as she ages” (1993, p. 78).

Physiology

The cause of gestational diabetes is unknown, but the physiology is thought to be related to hormonal changes in pregnancy. Normally, the placenta performs the task of supplying the fetus with nutrients and water through the mother’s permeable blood vessels (Lowdermilk et al., 2000). As the pregnancy advances, the placenta increases in size and also increases production of certain pregnancy-sustaining hormones, including human placental lactogen, free cortisol, and possibly prolactin (Rotondo & Coustan, 1993). Estrogen and progesterone hormones then directly alter the function of maternal pancreatic islet cells, leading to hyperplasia and the overproduction of insulin. When the mother overproduces insulin, placental hormones block its use in her own bloodstream. Normally, the pancreas compensates to stabilize the mother’s glucose level. However, in gestational diabetes the pancreas can no longer compensate, and the mother’s circulating glucose level rises (Rotondo & Coustan).

During pregnancy, the glucose crosses the placenta, and because the fetus manufactures its own insulin the mother’s additional glucose triggers fetal hyperglycemia. As the pregnancy progresses, the pancreatic islet cells of the fetus are

stimulated by the increased glucose, and the fetus also hyperproduces its own insulin. This combination of fetal hyperglycemia and fetal hyperinsulinemia is believed to contribute to perinatal morbidity and mortality, resulting from larger infants and fluctuating glucose levels after birth (Rotondo & Coustan, 1993).

New research by Kirwan et al. (2002) indicates that there may be a correlation with increased insulin resistance and the role of tumor necrosis factor (TNF)-alpha. These researchers found that the change in TNF-alpha was the “most significant independent predictor of insulin sensitivity ($r = -0.67, p < 0.0001$)” (p. 2207). Additional biochemical research to further explain the physiological basis of gestational diabetes is likely to follow.

The usual treatment for gestational diabetes is, at minimum, a diet modification program that monitors carbohydrate ingestion. Total caloric intake includes about 60% carbohydrates, 30% protein, and 10% fats. Women with gestational diabetes are also taught to control the timing and amount of the foods they ingest so that the carbohydrates are spaced. Depending on medically specified activity levels, women with gestational diabetes are normally encouraged to increase or maintain aerobic exercise in their daily life. If diet modification and increased activity do not control the blood glucose levels, then insulin injections are required.

Issues in Screening and Diagnosis

Differences are seen in the reported incidence and prevalence of gestational diabetes in various populations, both in the United States and around the world, caused by inconsistencies in the criteria used to make the diagnosis. These inconsistencies have

implications for research as well as for treatment. For example, a higher acceptable blood glucose level can eliminate a population of women from participation in a given study, or deny them treatment. For the “average” pregnant woman, a 50-gm glucose screening test is generally recommended at 24–28 weeks of gestation. In most areas of the world, a plasma glucose level ≤ 140 mg/dL is considered acceptable, and no further testing is required. A plasma glucose level > 140 mg/dL requires a 3-hour oral glucose tolerance test. The existence of any two values above diagnostic criteria confirms gestational diabetes. At the > 140 mg/dL screening level, 80% of the women with gestational diabetes will be diagnosed. At a 130 mg/dL screening level, the level recommended by the Expert Committee on the Diagnosis and Classification of Diabetes Mellitus, 90% of the women with gestational diabetes will be diagnosed (Expert Committee, 2003). This means that wherever the current standard threshold is used, the diagnosis is missed in 10% of women. These women are thus not channeled into treatment; they also miss the opportunity to participate in studies such as mine.

The ADA has adopted new screening criteria suggesting that risk assessment should begin as soon as the diagnosis of pregnancy is confirmed, rather than being delayed until 24–28 weeks of gestation (Expert Committee, 2003). For the woman considered at lower risk for gestational diabetes, the ADA has endorsed six criteria that could exempt her from having glucose testing during her pregnancy: (a) If the pregnant woman is less than age 25, (b) has no first-degree relative with diabetes, (c) was of normal weight prior to her pregnancy, (d) is of no known ethnic group with a high rate of gestational diabetes, (e) has no history of glucose intolerance, *and* (f) has never had a poor obstetrical outcome. However, the pregnant woman who has *any* of the above

characteristics is to be screened as soon as possible. If she does not meet diagnostic criteria for gestational diabetes at that first screening, she is to be rescreened at the usual time of 24–28 weeks of gestation, when insulin resistance usually begins (Expert Committee).

Despite the recommendations of leading researchers, however, diagnostic criteria are not uniform, and screening practices vary. In Maine, for example, a statewide committee of obstetrics specialists developed standardized guidelines for the screening, diagnosis, and management of gestational diabetes more than 15 years ago in consultation with Donald Coustan, a world-renowned diabetes researcher. The resulting *Maine Guide for Gestational Diabetes* (Maine Diabetes in Pregnancy Program, 1987) recommended using the > 130 mg/dL screening cutoff. Because the *Guide* has not been recently reviewed, however, the state-sponsored Maine Diabetes in Pregnancy Program now endorses the current ADA recommendations, which use the > 140 mg/dL cutoff. As a result, fewer women in Maine are being diagnosed with gestational diabetes.

Short- and Long-Term Implications

Short-term effects on an infant whose mother has gestational diabetes include greater chances of birth trauma, prematurity, and even death. Since the mid-1980s, when the obstetrical community accepted that perinatal mortality is associated with high fasting blood glucose levels in women, women with gestational diabetes who have a normal fasting glucose level have been treated as though their condition were a quality-of-delivery issue instead of a life-and-death issue. Large-for-gestational-age size in infants is the major reason for birth injuries and higher rates of operative deliveries, owing to the

increased difficulty of delivering disproportionately large shoulders, which is termed shoulder dystocia (Casey, Lucas, McIntire, & Leveno, 1997). Such shoulder dystocia can result in collarbone or arm-bone fractures during delivery or other problems caused by lack of oxygen in an infant half-delivered and unable to breathe. Shortly after delivery, infants are at risk for low glucose levels, respiratory distress, jaundice, low calcium blood levels, and an increased number of red blood cells causing blood viscosity (ADA, 2001; Simpson, 1999; York & Brown, 1995).

Such immediate complications may translate into longer hospital stays (Sermer et al., 1998). An Australian study showed an increased mean length of hospital stay for women with gestational diabetes despite no difference from controls in resuscitative efforts, shoulder dystocia, episodes of neonatal jaundice, low calcium blood levels, or low magnesium (Simpson & Kast, 2000). In the United States, results of studies also indicate an increased length of stay among women diagnosed with gestational diabetes (Scheffler, Feuchtbaum, & Phibbs, 1992; York & Brown, 1995). For the mother, short-term risks related to increased infant size include cervical and vaginal skin tears, fractures of pelvic structures, and hemorrhage, complications that can increase length of hospital stay. Increased lengths of stay were related to higher rates of cesarean deliveries, anemia from increased blood loss, extensive episiotomies, and other repairs of birth trauma (Mastrogiannis & Knuppel, 1996). Other short-term risks to the mother include an increased chance of high blood pressure disorders, muscle-tissue breakdown triggered by low glucose levels, infectious complications, anxiety, depression, and high glucose levels requiring treatment (York & Brown, 1995). High maternal glucose levels are also associated with perinatal death (Expert Committee, 2001; Rotondo & Coustan, 1993). It

has not been determined whether the increased incidence of cesarean delivery is a result of fetal growth disorders, alterations in obstetrical management when gestational diabetes is known, or both (ADA, 2001; Metzger & Coustan, 1998). There is a lack of large prospective randomized studies that would help physicians choose the best method of delivery for decreasing morbidity and mortality in mothers and infants with gestational diabetes (Ben Schachar & Weinstein, 1998).

Long-term considerations for women with gestational diabetes include an increased risk for developing diabetes after delivery, usually type 2, adult-onset diabetes mellitus (Buchanan & Kjos, 1999; Expert Committee, 2001). Type 2 diabetes, which is often related to obesity and insulin resistance, has serious potential consequences, and the same criterion— a fasting glucose level of greater than 126 mg/dL on two occasions—is used to diagnose both type 2 diabetes and gestational diabetes (Expert Committee, 2003). Medical complications from type 2 diabetes pose major risks of damage to end organs such as the heart, brain, kidney, blood vessels, and eyes, and it subsequently increases the risks for ulcers or amputations and gastrointestinal, genitourinary, sexual, and cardiac symptoms (Expert Committee, 2001). O’Sullivan’s 1980 study (as cited in Lawson & Rajaram, 1994) found that women who had experienced a pregnancy complicated by gestational diabetes had a significantly higher rate of cardiovascular complications 24 years postdelivery than women who had experienced only pregnancies without gestational diabetes. This finding has been supported by other studies, as well (Davis, 1997; Tamas & Kerenyl, 2001).

The economic burden of diabetes complications is also significant. In 1997, the combined cost of medical care and lost productivity attributed to diabetes was \$98 billion

nationally, \$460 million in Maine (Centers for Disease Control [CDC], 1998). A 1996 prospective study found that the cost per patient to manage gestational diabetes, defined as the total cost of diagnostic procedures, office visits, treatments, delivery, newborn care, and hospital stays anytime after diagnosis, was \$6,096 for diet-controlled and \$11,216 for insulin-dependent gestational diabetes in New England (Kitzmiller et al., 1998). In 1997, hospitalizations per 1,000 Maine residents were estimated at 310.5 with diabetes versus 112.5 without diabetes (CDC). In 1996, diabetes was the seventh leading cause of death in Maine, with approximately 300 deaths, according to the most recent statistics available from the Maine Diabetes Control Project (1998).

Although current obstetrical practices appear to be effective in decreasing the long-term effects of most perinatal complications, the long-term physical effects of gestational diabetes on offspring are still being investigated. Some associations have been found with increased risks for long-term neurological deficits, obesity, glucose intolerance, diabetes in adolescence and young adulthood, and, for female offspring, gestational diabetes (Blank, Grave, & Metzger, 1995; Expert Committee, 2001/2003; Simpson, 1999; Vohr, McGarvey, & Tucker, 1999).

Research in animal models has suggested that the tendency of female offspring to be diagnosed with gestational diabetes is acquired in utero, and the intrauterine environment, with its fetal hyperinsulinemia, is the most likely explanation for the various forms of morbidity associated with diabetic pregnancies (Boloker, Gertz, & Simmons, 2002; Moore, Singer, Bradley, Rothman, & Milunsky, 2000; Rotondo & Coustan, 1993). Antepartum maternal metabolism may affect later cognitive and behavioral function of developing brain cells in utero. Human studies conducted in the

past decade have shown that the intrauterine metabolic environment continues to affect the offspring's neurodevelopmental course. Four prospective studies of two cohorts of developing children published in 1990, 1991, and 1995 reported an association between higher blood glucose levels in the mother and impaired psychomotor function in the developing child. (Rizzo et al., 1995, p. 1756; Rizzo et al., 1990; Rizzo, Metzger, Burns & Burns, 1991; Silverman et al. 1991).

A number of studies (Doherty, 1997; Doherty & Hepper, 2000; Hoffmeyer, 1990) have documented neurological changes postdelivery in the infant born to a mother with gestational diabetes. Ornoy, Ratzon, Greenbaum, Wolf, and Dulitzky (2001) studied 57 school-age children who were born to mothers with either diabetes or gestational diabetes, using an age-matched control design. Using the WISC-R, Bender Test, and Bruininks-Oseretzky Test of Motor Proficiency, the authors found that infants of diabetic mothers had increased rates of inattention and fine and gross motor impairments.

Psychosocial Impact

The consequences of gestational diabetes are not solely physiological, and Frank (1991) argued that disease physiology is actually less important than the impact from the experience of having a condition. Several mechanisms link the psychosocial aspects of gestational diabetes with its physiology. For example, an association between increased stress and increased glucose level has been documented (Cabulum, Robbins, & Rosas, 1987; Rosas & Constantino, 1992; York et al., 1996; Zigrossi & Riga-Ziegler, 1986). Spirito et al. (1989) reported that this association might be related to hormonal activity

directly or related indirectly, as a result of the woman's being less able to adhere to a recommended regimen because of her reaction to stress.

Researchers have indicated that the diagnosis of gestational diabetes, and the resultant medical management routine, are stressful, overwhelming, and anxiety producing (Ahlers & Ahlers, 1991; Kelleher, 1994; Nichol et al., 1993; Rosas & Constantino, 1992; Rotondo, 1990; Rotondo & Coustan, 1993; Thomas-Dobersen et al., 1993; York et al., 1996). Persily (1996) stated that "behavioral and self-care modifications required of women diagnosed with gestational diabetes mellitus may increase their stress levels beyond those considered normal in pregnancy" (p. 601).

Chazotte et al. (1995) reported that because gestational diabetes is usually detected late in pregnancy, women are forced to "adjust both psychologically and behaviorally" to this high-risk complication in a very short time (p. 375). Before delivery, the woman newly diagnosed with gestational diabetes must learn about the condition and its threat to the fetus and to herself, cope with the diagnosis, learn about dietary restrictions and the importance of exercise, learn to do glucose testing four to six times daily, intensify her schedule of health care visits, and cope with more frequent testing for fetal well-being. One in 10 of these women must also learn about insulin, the signs and symptoms of low and high blood glucose levels, and how to use syringes to inject herself multiple times per day (Chazotte et al.; Lawson & Rajaram, 1994). Yet little research has been done on the psychological effects of the experience of gestational diabetes or the ways in which it influences the mother's attitude toward the pregnancy (Chazotte et al.).

Crisis intervention and stress management theories provide a useful perspective for viewing women diagnosed with gestational diabetes. Crisis, as described by Caplan (1964) and Aguilera (1990), is a disturbance caused by a stressful event or a perceived threat to the self. Appraisal of a stressor, the processing and comprehension of a stressful situation, takes place on many levels (Lazarus & Folkman, 1984; Stuart & Sundeen, 1995). On a cognitive level, a person appraises harm, or loss, that has already occurred; anticipated harm, or threat; and challenge, a positive focus on gain, growth, and mastery (Monat & Lazarus, 1991). Social psychologists describe people who are resistant to stress, who are *hardy*, as being high in their ability to manage challenge. Such people tend to respond to stressors as stimulating, rather than as threatening, believing that they can influence events and are not helpless in the face of life's problems (Hull, Van Treuren, & Virnelli, 1987; Kobasa, Maddi, & Kahn, 1982).

In a crisis, people turn to their accustomed ways of coping with stress; if they are ineffective, anxiety levels increase (Lazarus, 1966). Therefore, an important aspect of assessment, the first step in crisis intervention, is to understand the patient's perception of the event, or stressor (Lazarus & Folkman, 1984; Stuart & Sundeen, 1995). Because individual perceptions are highly subjective, it is crucial for the nurse clinician to not assume that a woman with gestational diabetes experiences the information of the diagnosis in a certain way. An assessment of the woman's perception of the diagnosis and of her previous coping skills—her frame of reference—will suggest how she may experience gestational diabetes and its implications. Once the perception is assessed, the clinician can evaluate support systems and coping resources (Aguilera, 1990; Stuart & Sundeen, 1995).

For example, Rotondo (1990) reported that women with gestational diabetes usually need “immediate information and support,” and that they are “very often confused” about the diagnosis because the first half of their pregnancy may have been uneventful (p. 144). In a classic work by Williams, Martin, Hogan, Watkins, and Ellis (1967), the authors “hypothesized that in attempting to gain benefit from support, teaching, and appropriate medical treatment, diabetic patients are influenced by intelligence, knowledge, and motivation as well as by biologic, psychologic, and socioeconomic factors” (as cited in Rosas & Constantino, 1992, p. 16). It has been suggested that information and social support may not only increase adherence but also may alleviate anxiety in the woman (Coplun, 1990; Howard, 1992). Because people are multifaceted and complex, stress will affect each person differently. However, it has been documented that during times of stress, learning is hindered (Zigrossi & Riga-Ziegler, 1986). If stress hinders learning, educational interventions may not have the intended effect or may not be well received. Persily reported an association between lower anxiety levels and increased treatment compliance (1996), which could mean that women who cope well adhere better to treatment regimens. Therefore, a secondary goal of my study was to better understand the complex factors that contribute to perceptions of stress and to ascertain alleviating conditions that can facilitate learning.

A model for helping people learn in times of stress is (a) to repeat information and (b) to provide support. These elements are crucial in working with the woman diagnosed with gestational diabetes (Keohane & Lacey, 1991). Persily, Brown, and York (1996) presented a model of home care for high-risk childbearing families, using gestational diabetes as their example, in which the clinical nurse specialist (CNS) kept a log of calls

from patients. Analyzing the log for episodes of help seeking showed that the most frequent reason patients called the CNS was to seek information. The second most frequent reason was to request help in staying with the medical regimen, and the third was to ask for psychological help. Persily et al. concluded that the woman's ability to control her glucose level depended largely on her knowledge regarding diabetes and pregnancy. Yet the results might also have indicated an association between control of blood glucose and practical and emotional support received. When Ruggiero, Spirito, Bond, Coustan, and McGarvey (1990) studied the effects of stress and social support on compliance with treatment regimens in women with gestational diabetes, their findings indicated that social support during treatment regimens was most strongly associated with compliance.

Conversely, when Spirito et al. (1989) researched the psychological impact of the diagnosis of gestational diabetes, they concluded that the diagnosis had no "adverse effect on the emotional status of pregnant women" (p. 564). It is important to point out that the women in this study were interviewed several weeks after being informed of their diagnosis. Spirito et al. inferred from their results that the diagnosis of gestational diabetes has a "short-lived negative" effect on mood and that patients had adapted by the time of interview (p. 564). However, an equally likely inference might be that the patients had received appropriate levels of support to facilitate the adjustment they showed. It is also important to note that the instrument was testing for mood alteration, not anxiety level or perceived stress.

Langer and Langer (1994) also concluded, from a study using the Profile of Mood States-Bipolar Form, that "the intensified management of newly diagnosed gestational

diabetes mellitus does not increase patient anxiety and depression” (p. 329). However, because *anxiety level* is only a subscale of six bipolar affective states measured by the Profile of Mood tool, the results of that study may not accurately reflect the impact of this diagnosis on anxiety levels because there are better, more sensitive measures of anxiety. Furthermore, although each subject was asked to rate “how she had been feeling during the period after testing for gestational diabetes mellitus” (p. 330), the women were asked to recall their anxiety after initial diagnosis. Recall measures may not be as valid as surveys taken at the time of the diagnosis because people who have since learned to cope may minimize their earlier feelings. In addition, the study’s authors recognized that the power of the study was less than optimal because the control group was small. Nonetheless, several of the results are interesting: The insulin-treated patients had more no-shows for clinic appointments; the subjects who had better glucose control scored with lower levels of depression; and 5% of the variance in anxiety and depression could be explained by marital status, with single women experiencing significantly higher levels. In their discussion, the authors indicated that the married women in the study could rely more on social support than could single women, and that spousal support might have helped to minimize the stress they experienced from the diagnosis.

Persily (1996) studied the relationship between how women with gestational diabetes perceived the diagnosis and how they adhered to treatment. She recognized that women diagnosed with gestational diabetes would differ in their reactions to the stressor of diagnosis and treatment, and that the differences might be related to a woman’s perception of the impact the diagnosis would have on her life and on her ability to cope. A participant’s subjective response, or appraisal of the stressor, was thus considered

important. Results of the study showed a significant positive correlation between a participant's perception of the diagnosis and her adherence to treatment. However, the author also found that increased psychological impact was associated with decreased glucose monitoring and was interpreted as a measure of decreased adherence, so that participants who perceived a greater impact produced fewer records to evaluate for either high or low glucose levels. Furthermore, because treatment was measured as a whole, precise information about parts of the prescribed regimen the women adhered to was lost. For example, doing both dietary recommendations and glucose checking half the time was recorded the same way as adhering to dietary recommendations 100% of the time but doing no glucose checking. This study demonstrated problems inherent in the research design, which relied on self-reports of recalled behaviors and used a tool that lacked the ability to measure specific aspects of adherence. Nevertheless, the overall findings point in the direction of a relationship between perception of the diagnosis of gestational diabetes and adherence to treatment regimens.

In grounded theory research, readings in the specific phenomenon to be explored are saved until ideas begin to emerge from the data being collected and analyzed (Glaser, 1992). For the proposed study, a literature review specific to the topic of coping with gestational diabetes was not recommended, and not conducted, until after data had been collected in a pilot study. Therefore, I was not aware of the following study when I collected the pilot data.

Lawson and Rajaram (1994) examined the psychosocial effects of gestational diabetes and found that the diagnosis and subsequent medical regimen had a "profound effect on respondents resulting in fear, depression, and anxiety," noting that the "personal

disruption” caused by the medical regimen seemed to exaggerate the “unique stress of a ‘normal’ pregnancy” (p. 536). These findings sharply contradicted earlier quantitative studies in which the results indicated a minimal impact of the condition (Langer & Langer, 1994; Spirito, 1989). The research reported by Lawson and Rajaram, which was labeled an ethnographic study, was analyzed using Glaser and Strauss’s (1967) grounded theory method and generated the concept *experiencing a transformed pregnancy*. Although Lawson and Rajaram examined how women with gestational diabetes perceived the diagnosis and treatment, they did not systematically explore the specific coping strategies the women developed. In fact, they suggested a need for further research to examine not only the ways in which women cope with the diagnosis of gestational diabetes, but also the ways in which they cope with health care providers in the often-patriarchal context of obstetrical practice.

Because the current study used grounded theory methodology, the literature review continued as study data were collected and analyzed. The pilot study was completed and the proposal written in 2001; the current study was conducted in 2002; and the dissertation was completed in 2003. After the initial literature review in 2001, I conducted additional, periodic searches in the MEDLINE, PsychLit, CINAHL, and HealthSource electronic databases. Only the following three studies were found on the topic of gestational diabetes and coping.

Rumbold and Crowther (2002) concluded that the diagnosis of gestational diabetes had an adverse impact on women’s perceptions of their own health. The authors conducted a prospective survey of women prior to being screened for gestational diabetes, after screening, and late in pregnancy using the Spielberger State-Trait Anxiety

Inventory, Edinburgh Postnatal Depression Scale, and the Medical Outcomes Study Short-Form, 36-Item Health Survey. Participants were women from a level 3 teaching hospital in South Australia. The authors found that the time of diagnosis is significant and warrants attention. The results of that study indicate an association between mood and the diagnosis of gestational diabetes. These results contradict the findings of studies that assessed women diagnosed with gestational diabetes using the Profile of Mood States-Bipolar Form (Langer & Langer, 1994; Spirito et al. 1989). In those studies, women were asked to recall their memory of the impact of the diagnosis up to 6 weeks after the fact. I believe that through conducting qualitative research, such as the current study, which allows women to describe the impact of the diagnosis close to the time it occurred, and through using an inventory that specifically measures anxiety traits, researchers can more accurately interpret the experience of the gestational diabetes diagnosis.

Coffman and Ray (2002) researched African American women's descriptions of support processes during high-risk pregnancies and postpartum. Four of the women in their sample told in-depth stories. One was coping with gestational diabetes. The theory of support generated from the data was *mutual intentionality*, meaning that the support-givers and the mothers played reciprocal roles in the helping process. Themes included *being there, caring, respecting, sharing information, knowing, believing in, and doing for the other*. The authors concluded, "for support to happen, the therapeutic relationship must be valued as a mutual resource" (p. 536). This finding is congruent with the inference that the subjects in the study by Spirito et al. (1989) had received levels of support that facilitated the adjustment they showed by the time they were questioned.

Levy-Shiff, Lerman, Har-Even, and Hod (2002) evaluated biological and psychosocial risk factors in high-risk pregnancy and their relation to infant developmental outcomes for a sample of 153 Israeli women with gestational diabetes, pregestational diabetes, and no diabetes. Questionnaires evaluating coping, resources, well-being, and distress were completed during the second trimester; the maternal fuels were analyzed throughout the pregnancy. At 1 year, offspring were administered the Bayley Scales of Infant Development, and mother-infant interactions were observed. The authors found that maternal coping differed among the three groups and differentially predicted infant development. Infants of mothers with diabetes had lower test scores and revealed more negative and fewer positive behaviors than did infants of mothers without diabetes. The results suggest that the diagnosis has a significant impact on women and their offspring psychosocially even beyond the period of diagnosis, a phenomenon that warrants further investigation.

Given the high incidence, the array of complications to the mother and to the infant, and the economic costs, gestational diabetes is a significant problem. The psychosocial impact of the diagnosis is particularly daunting and demands extensive coping skills. A review of the literature showed that anxiety is known to hinder learning, that there is an association of some type between higher anxiety levels and higher blood glucose levels, and that effective maternal glucose control results in better neurological and intellectual development in the offspring of women diagnosed with gestational diabetes. However, the few studies examining any aspect of the psychosocial impact of gestational diabetes produced inconclusive and contradictory findings. Coping strategies used by women diagnosed with gestational diabetes were only thinly described, by

studies that did not directly examine either the factors that influenced the women's ability to cope with the diagnosis or the specific strategies the women developed to cope with the diagnosis.

Development of Research Focus

A paradigm, or worldview, may be considered a frame of reference for seeing, and making sense of, the social world one creates and is created by. A paradigm influences the things one looks at and how one looks at them. It influences the things one labels as problems, the problems one considers important, and the methods one chooses to solve those problems. One's worldview also explains the things one chooses not to look at. A paradigm influences perceptions in subtle, often-unrecognized, and therefore powerful ways (Maguire, 1987).

My Master of Science coursework focused on adult health and patient education, with a nursing major. During graduate school I worked as a full-time staff nurse in medical-surgical and maternity areas. It was during this time that I developed an interest in gestational diabetes, which has additional personal relevance because of my strong family history of diabetes. One of the things I recall most vividly from those years is the way gestational diabetes was viewed by many of my colleagues as a "minor" diagnosis because they considered it to be "just temporary." It was generally considered less important to teach women with gestational diabetes about the diagnosis than it was to teach people with type 1 or type 2 diabetes. The teaching tools available were, and are,

generalized for patients with diabetes; most regional, state, and national databases incorporate gestational diabetes into their hospitalization statistics. Gestational diabetes was, and still is, often seen as too complex to go into with someone who probably will not have the condition more than 2 months. Moreover, because it was considered temporary, gestational diabetes was generally seen as less likely to cause damage to the body than type 1 or type 2 diabetes. This seemed wrong to me, possibly because my family history had sensitized me to the seriousness of diabetes.

As an adult health educator, I value respectful and nurturing interactions. As a researcher, I follow an axiom taken from Maguire (1987): “We both know some things; neither of us knows everything. Working together we will both know more, and we will both learn more about how to know” (p. 38). Biases I brought to the study are that the diagnosis causes concern to the women who have it, and that those women are the persons who best know how they feel about the experience. Maguire says, “Experts’ assessment of common people’s inability to ‘know’ becomes a self-fulfilling prophecy. Taught to believe they cannot adequately understand their own lives, and deprived of participation in inquiry processes which might enhance their understanding, ordinary people simply stop trying” (p. 36). Because the grounded theory research design includes participants in what is an interactive social process, my hope was that the study would give participants coping with gestational diabetes an opportunity to better understand their own lives.

Rationale for Research Methodology

Philosophy of Symbolic Interactionism

Grounded theory is rooted philosophically in symbolic interactionism, a sociological approach to the study of human behavior in a social context. Blumer (1969) described three premises of symbolic interactionism. First, people behave toward the abstract, physical, and social objects they encounter—institutions, ideals, activities, other people, the self—according to the meanings they have made for them. Second, these meanings are developed through interactions with other people in relation to the objects. Third, these meanings are not constant, but are continually modified through an interpretive process. In social groups, symbolic meanings are created and shared through socialization and a common language. People's behavior and sense of self are shaped by their perception, interpretation, and reinterpretation of their experiences. Meanings, behavior, and sense of self are thus dynamic and ever evolving (Blumer, 1969; Chenitz & Swanson, 1986; Denzin & Lincoln, 1998; Kaplan, 1964).

Grounded Theory Approach

I used the grounded theory research method originated by Glaser and Strauss (1967), a qualitative, inductive method used to generate theory about human behavior in a social context. I view coping with gestational diabetes as a social process rather than as simply an individual phenomenon. It is relevant not only to the individual, it has relevance beyond the individual. It involves family support and family lifestyle changes, and it adds a new dimension to the way in which a pregnant woman relates to the world

around her. Because the method is designed to discover theory inductively, from the data, and to explain what is happening in the research situation, it is particularly useful in studying complex phenomena about which little is known, or where a fresh perspective is warranted.

Grounded theory is designed to discover the theory implicit in data that deliberately incorporate social context. Unlike other methods used to analyze qualitative data, grounded theory focuses on how participants perceive and interpret their social reality, not on how they describe their lived experience (Stern, 1994). Because of this focus on social processes, a theory generated with this method is often labeled with a process term, frequently a gerund, e.g., “planning.” Grounded theory also differs from other methods in that it involves collecting and analyzing data concurrently. The literature review of the specific phenomenon is intentionally delayed to ensure that ideas emerging from the data are not prematurely constrained by the researcher’s focus on existing theory. Literature is examined as it becomes relevant and is treated like data to be compared with the data emerging from the study (Glaser, 1978, 1992, 1998; Glaser & Strauss, 1967). Thus, the reader of a grounded theory study will see new literature introduced in the presentation of results and conclusions.

With grounded theory’s analytic method of *constant comparative analysis*, the data are analyzed as they are collected, rather than only at the end of the study, so that the analysis shapes the data collection as the research progresses. In grounded theory research, the data are generally words, which include the words participants use to tell their stories and the researcher’s observation notes. At the beginning of the constant comparative analysis the grounded theory researcher compares these words—the data—

with each other to identify variables, or themes, which the researcher calls *categories*. The characteristics of the categories the researcher calls *properties*. The range of variation along any property the researcher calls *dimensions* (Glaser, 1992).

Interview transcripts are *coded* line by line, with each of the ideas expressed by the participant's words assigned to a tentative category. As the analysis continues, the researcher records, in *memos*, ideas about relationships among categories and their properties. Patterns of links among categories and properties become evident, and eventually a *core category* emerges. A core category is a variable that appears to best explain how a problem is processed. The relationships of categories and properties to each other, and to a core category, suggest *concepts* and unifying themes. These concepts form the basis for tentative hypotheses that shape additional sampling (Charmaz, 1983; Chenitz & Swanson, 1986; Glaser & Strauss, 1967). Glaser's (1978) theoretical codes, known as the 6 Cs—context, condition, cause, consequence, covariance, and contingency—are often used to determine the links between categories so that a core category can then be found.

The sample is not determined before the research begins but is developed during the research process through purposive *theoretical sampling*. In theoretical sampling the researcher deliberately seeks participants who might contribute data, according to the researcher's previous knowledge and existing data gaps. The intent is to expand the data and to discover additional properties through increasing the diversity of the sample. New directions are indicated through concurrent data collection and analysis. Eventually, when the data begin to repeat—when new properties no longer emerge—a category is considered to have become *saturated*, and data collection is not continued for that

category. At this point, the memos are *sorted* to elucidate the theory (Glaser, 1978, 1992, 1998; Glaser & Strauss, 1967).

Glaser and Strauss first described grounded theory methodology in 1967. Since then, the authors have independently developed divergent sets of procedures, and researchers who use the grounded theory method must specify which procedure they will follow. Strauss and Corbin (1990) developed the *emergent fit mode*, in which the researcher begins with an existing hypothesis against which data are then compared. One drawback of this method is that it restricts the researcher's attention to data that either support or refute the hypothesis used, a practice that can limit the discovery of categories and properties and thus constrain the generation of theory (Chenitz & Swanson, 1986; Glaser, 1992).

I chose therefore to use Glaser's *discovery model*, which was developed to study phenomena about which little or nothing is known (Glaser, 1978, 1992, 1998; Glaser & Strauss, 1967). The discovery model creates a theory in process that is neither linear nor static; a researcher can make connections and clarify explanations even while writing the final report. According to Glaser and Strauss (1967), the theory is never really finished. New information that does not fit the original conceptual framework is welcomed as an extension of the original theory.

Concept Analysis

The rationale for concept analysis is to build a solid foundation for the theory that emerges and to provide a theoretical basis for future research efforts. Concepts, the basic elements of any theory, are connected through a conceptual framework linking the

empirical data to the abstract theory. Broadly defined concepts are open to differing interpretations, and such ambiguity weakens theory; conversely, defining concepts precisely clarifies theory.

I chose to use Walker and Avant's (1995) method of concept analysis, which is based on the early work of Wilson (1969), because it is well established as an approach to analyzing concepts related to nursing and is supported in the metatheory literature (Chinn & Kramer, 1991; Meleis, 1991). However, I also incorporated some of the elements of Rodgers's approach (1989), such as using exemplar cases taken from the nursing literature where they are available, rather than using only Walker and Avant's hypothetical cases.

As defined by Walker and Avant (1995), concept analysis is "a strategy that allows us to examine the attributes or characteristics of a concept" (p. 37). It is a systematic process for distinguishing between defining and irrelevant attributes in order to reduce ambiguity, clarify overused concepts, make definitions operational, generate research hypotheses, and develop nursing theories (Walker & Avant). In the methods chapter, I describe using Walker and Avant's method of concept analysis while integrating the ways in which Glaser (1992) clarifies concepts and describes data saturation. In the conclusions chapter, I illustrate how I developed theory from concepts and incorporated Glaser's practice of using opposites when defining attributes.

Strengths and Limitations of the Method

It is important for nurses to learn directly from the experience of women who are diagnosed with gestational diabetes, rather than to assume that they "know" what is

happening to these women. The grounded theory discovery model was chosen to allow participants in this study to describe their interpretation of their experiences.

Because the grounded theory method generates explanatory theory that is “grounded” in the accounts of people who have experienced the phenomenon under study, it reflects the multiple facets of that experience. Grounded theory is thus congruent with feminist research philosophy, which requires looking at the whole person rather than being distracted by a deductionist, Cartesian model of analyzing a phenomenon at its smallest possible unit (Wuest, 1995). By attempting to understand participants’ situations from their own descriptions, the grounded theory researcher also gives participants control over the flow of data and offers them an opportunity to reflect on their experience.

Because this study has been limited to women with gestational diabetes, the research results allow practitioners to better understand the ways in which women cope with the diagnosis of gestational diabetes. Nurses may be able to help women with gestational diabetes learn more about the diagnosis through learning about other women’s experience with the diagnosis. Eventually, nurses may also be able to develop more proactive nursing interventions, such as helping these women try more positive coping strategies.

As noted by Charmaz (1983), the limitations of qualitative research methods can include difficulties in establishing adequacy of evidence and credibility, also known as validity and reliability.

Validity and Reliability

Because grounded theory, a method particularly useful with qualitative data, was developed in a quantitative era and uses quantitative terminology, I will use the quantitative terms *validity* and *reliability*. In parentheses are the qualitative terms that have since become acceptable and are preferred by Lincoln and Guba (1985), who hold that qualitative researchers do not have to try to fit into a quantitative paradigm.

Validity (Credibility, Trustworthiness, Goodness of Fit)

According to Leininger (1985), in qualitative studies validity “refers to gaining knowledge and understanding of the true nature, essence, meaning, and characteristics of a particular phenomenon under study” (p. 68). The qualitative term *credibility* is seen as parallel to validity in quantitative work (Hall & Stevens, 1991). In quantitative studies validity has been characterized as *internal* and *external*. Internal validity refers to the degree of truth that exists in each relationship between concepts; external validity refers to the generalizability of the study to other populations (Cook & Campbell, 1979). Internal validity can be threatened by a number of factors. History that has not been taken into account, for example, needs to be described with regard to its impact on a situation or event. The researcher, participants, and process under study all change over the course of the research. Choosing one participant over another introduces bias, as does a participant’s leaving the study. Changes to the participants, and to the researcher, resulting from continued observation and interaction are included in the research data as memos and field notes. Grounded theory is a participatory research method requiring

close involvement with the researcher, and although the effects just noted are expected and are considered in the analysis, the method requires careful note-taking over time in order to analyze the researcher's interaction with the participants (Chenitz & Swanson, 1986; Glaser & Strauss, 1967). The note-taking documents the changes experienced by participants and researcher, and the notes are entered as data to ensure that the changes are taken into account.

Because external validity in grounded theory is demonstrated when the cases are representative, sample diversity is essential: the more diverse the sample, the more generalizable the study. When data analysis begins to suggest categories and concepts, it becomes crucial to deliberately seek "negative" cases to expand the scope and depth of the emerging theory. The attempt is made to fill perceived gaps in the developing concepts through theoretical sampling for new and yet undiscovered data (Chenitz & Swanson, 1986; Glaser, 1978; Glaser & Strauss, 1967).

According to Glaser and Strauss (1967), the study of a phenomenon's basic social process creates a theory that can be analyzed by four criteria: fitness, understanding, generality, and control. These criteria demonstrate the validity of the analysis used to generate the theory. *Fitness* means that categories should be induced from the data and fit closely with them, rather than being forced or distorted. *Understanding* means that the emerging theory will make sense, and be understandable, because it comes from the data. *Generality* refers to the degree of abstraction that builds upward from the data set. *Control* means that the theory allows the user—the staff nurse, for example—to control the daily situation as it changes through time. In other words, the theory must be worth using.

Reliability (Dependability, Consistency, Accuracy)

In quantitative research, reliability refers to the accuracy of a measurement over repeated testing. Results obtained from grounded theory and other qualitative methods are frequently criticized for their lack of replicability because a test-retest is not usable with a phenomenon that changes over time. Leininger (1985) explains that reliability in qualitative research focuses on “identifying and documenting recurrent, accurate, and consistent (homogeneous) or inconsistent (heterogeneous) features as patterns, themes, values, worldviews, experiences, or other phenomena confirmed in similar or different contexts” (p. 69). Because the grounded theory method could be described as a best analysis over time with the researcher as instrument, results depend upon the skill, creativity, time, resources, and, perhaps most importantly, analytical ability of the researcher. Although the data and their analysis will be different in each grounded theory study, results should still allow the reader to understand a phenomenon. Interviewing participants over time and across locations reduces random error. In qualitative research, random error implies that a one-time interview could be skewed because a participant might not reveal her true nature. With repeated interviews and observations, and by having the researcher evaluate the participant over time, the chances that one interaction carries the weight of theory are minimized. Thus, the theory will still work, and in this way it is reliable (Wilson & Hutchinson, 1996).

In grounded theory, data analysis can be particularly influenced by four characteristics of the researcher. The researcher’s level of training in the method will affect a theory’s density, complexity, scope, and concept integration. Life experience, which can make the researcher more sensitive to relevant data when they appear, can also

create assumptions that impede the ability to see what is really happening. Believable results depend on the researcher's confidence in the data's interpretation. Because the early phases of data collection produce a large volume of data whose meanings are unclear, tolerance for ambiguity helps the researcher trust that concepts will emerge as more data are collected and analyzed. Interacting with the data and exchanging ideas with colleagues help the grounded theory researcher, who is often working in isolation. Reporting tentative hypotheses is an effective way to test bias in the researcher (Corbin, 1986). As hunches develop and are shared with colleagues, the colleagues can help the researcher identify areas of prejudice or narrow vision. When tentative hypotheses are either validated or disputed, the researcher can document both personal development and the category development.

Other conditions are also relevant to the grounded theory research process (Chenitz & Swanson, 1986). Each researcher's perspective, or worldview, in approaching the data is different; none is wrong, as long as it is well described. Data volume and variety must be sufficient; one or two cases do not generate a theory. Categories must be dense and well developed, with patterns emerging repeatedly from varied data. Although grounded theory is an inductive method, it does involve what Glaser and Strauss (1967) called "multiple-hypothesis testing" and "verification," termed validation, even with the grounded theory discovery model. Essentially, relationships between concepts are linked and then validated with either observation or interview data. The discovery model is differentiated here because the method is different in Strauss and Corbin's (1990) emergent fit model of grounded theory. Because theory must be constructed from concepts, the level of analysis needs to reach an appropriate degree of abstraction. In

building constructs, the analyst will continually move toward higher and higher levels of abstraction. The analysis must be sufficiently detailed for the theory to be dense with well-integrated concepts.

Relevance to Nursing

With the focus of nursing upon disease prevention, health promotion, improved function with a known disease state, and preservation of dignity for the dying patient, members of the nursing profession diagnose and treat both actual and potential responses to illness. Although biomedical studies provide important recommendations for evidence-based practice, to improve clinical practice it is equally necessary to study the “human” side of an illness. As a nurse, I agree with Frank’s (1991) judgment that the impact of the experience of having a condition is more important than the disease physiology. The impact is particularly an issue when stress influences blood glucose control (Cabulum, Robbins, & Rosas, 1987; Persily, 1996) and perhaps treatment adherence (Habboushe, 2000; Landel, 1995).

Walker and Tinkle (1996) underscored the value to nursing science of an integrative philosophy that considers the whole person, rather than merely the disease state, and praised nursing for the “creative use” of both qualitative and quantitative research methodologies (p. 380). According to Mitchell and Cody (1991), nursing is a human science, differing from a natural science in that it views humans as the preferred source of knowledge about their own experience, “a coherent whole to which subjectivity

is fundamental” (Mitchell & Cody, p. 55). Nurses are incorporating integrative concepts into education, research, and practice, and Mitchell and Cody noted that nursing theorists Paterson and Zderad, Newman, Watson, and Parse have stated that natural science methodologies are not the most appropriate methodologies for nursing science.

Much of nursing science is based on theories developed in other disciplines. Because most methods use existing theory to guide the research, much published nursing research reflects a deductive, theory-testing epistemology. Arguably, the discipline of nursing requires its own body of theoretical knowledge. This grounded theory study will contribute both to the substantive area of gestational diabetes and to nursing theory specifically (Glaser & Strauss, 1967; Meleis, 1991/1997). Chinn and Kramer (1991) have described a midrange theory as including a well-integrated conceptual framework, containing elements usable in research, practice, and education in a substantive area, such as obstetrical nursing. Because midrange theories are limited in scope and have a lower degree of abstraction than grand theories, they are generally practice based. Typically, concepts emerge from studies in substantive areas that are then developed to a level of abstraction that crosses nursing fields and reflects a wide variety of nursing care situations. As Meleis (1991) points out, midrange theories “provide a conceptual focus and a mental image that reflect the discipline’s values, but they do not provide prescriptions for practice or specific practice guidelines” (p. 46).

A grounded theory study is considered substantive when it applies to a particular population, such as women diagnosed with gestational diabetes. Glaser (1978) points out that both substantive theories and more formal theories, such as those generated about

stigma or deviant behaviors, “are both considered middle range” because they fall between a “minor working hypothesis and an all-inclusive grand theory” (p. 143).

Grounded theory research can produce a midrange theory that may eventually lead to the development of interventions. Loss theory, for example, has been developed through an examination of grounded theory studies in substantive areas where loss had been experienced (e.g., perinatal area, emergency department, and nursing homes); the midrange theory of loss was then confirmed by a meta-analysis of the studies. The meaningful and effective nursing strategies that have arisen from that theory are numerous and ever changing. The theory served as a springboard for ideas that could alter the conditions and context of the experience of loss for patients and patients’ families. Seeing how loss of previous function or ability, loss of home, or loss of a loved one affected people in predictable ways enabled health care providers and crisis intervention teams to develop strategies to help people through difficult times. At the very least, the theory has helped caregivers understand the complexity of loss.

Accordingly, the goal of my own study was to develop a midrange theory that explains how women manage the diagnosis of gestational diabetes by assessing the coping strategies they use. My examination of coping strategies will help nurse clinicians and researchers understand the impact of the diagnosis, and the need is great to understand, from a psychosocial perspective, what women diagnosed with gestational diabetes experience. To date, the research conducted on gestational diabetes has been predominantly biomedical. Few studies have been done from the nursing perspective: considering the whole person rather than just the diagnosis.

Relevance to Feminist Research

Major nursing theorists have turned to feminist inquiry as a way of generating knowledge that reflects women's voices. Postmodern feminism is consistent with grounded theory methodology in recognizing the validity in multiple, varied perceptions of reality (Glaser & Strauss, 1967; Hekman, 1990; Wuest, 1995). "There are 'truths,' not 'Truths'" (Hekman, p. 63). The term *truths* is defined by Hekman as a philosophy that embraces being egalitarian, allowing for plurality of thought and multiplicity of experiences. The philosophy is authoritative but uses multiple lenses to look at a problem or process. In contrast, the term *Truth* implies a philosophy which holds that a single, "right" truth can be discovered. Such a philosophy would now be considered autocratic, dualistic, ethnocentric, and, often, gender biased (Hekman, 1990; Wuest, 1995). Rather than accepting commonly held beliefs or existing hypotheses, the grounded theory researcher asks, What is going on here? (Glaser & Strauss, 1967). Feminist principles hold that research should have relevance for the participant, that the method should balance power between researcher and participant, and that the process should allow interpretation by both (Lamb & Huttlinger, 1989; Wuest). Grounded theory holds that women can be "knowers," and that their experience is legitimate. It looks at social processes within a social structure, and it acknowledges that researcher bias influences research questions and analyses. Like feminist theory, grounded theory suggests that knowledge is shaped by the social context of the knower. When the voices of a disadvantaged group are made audible, this group can then be better understood by the dominant culture (Hekman; Wuest).

It could be argued that women are one such disadvantaged group. For example, over the last century normal pregnancy has been medicalized in the name of safety. Although morbidity and mortality rates have declined in those 100 years, it can be argued that advances including better nutrition, antibiotics, and the public's general knowledge of health practices have contributed significantly to increased safety of pregnancy and childbirth. Until very recently, the majority of physicians practicing obstetrical care were male, and one could argue that men tend to be less sensitive than women to the needs of pregnant women. The mother's satisfaction with the experience of labor and delivery was of secondary concern until about 20 years ago, when women's increasing challenges to patriarchal dominance of the child-birthing experience prompted changes in routine care. Such changes had not occurred prior to that pressure, even though existing research had indicated no real need for such things as perineal shaving, predelivery enemas, sterile surroundings, and bed-bound laboring and delivering positions (Oakley, 1980).

A review of the literature showed that anxiety is known to hinder learning, that there is an association of some type between higher anxiety levels and higher blood glucose levels, and that effective maternal glucose control results in better neurological and intellectual development in the offspring of women diagnosed with gestational diabetes. Few studies have examined the psychosocial impact of gestational diabetes. Coping strategies used by women diagnosed with gestational diabetes have been only thinly described, by studies that did not directly examine either the factors that influenced the women's ability to cope with the diagnosis or the specific strategies the women developed to cope with diagnosis. Grounded theory, a methodology rooted in symbolic interactionism, is useful when little is known about a phenomenon or when a fresh

perspective is desired. Because the grounded theory approach is sensitive to multiple perspectives and differing views, the method is relevant to feminist research and allows the researcher to afford women control through providing an opportunity for their own voices to be heard and by further encouraging their interaction with the emergent theory. Because the grounded theory approach results in a midrange theory, the method is well suited to studying nursing concerns and building the science of nursing.

Chapter 3

METHODOLOGY

Pilot Study

In preparation for the dissertation research I developed a grounded theory pilot study with 5 participants. My intention was to test my interview and observation skills and to ascertain whether the preliminary sample and interview questions I had developed would generate the kinds of data that this study required. The pilot study, which was funded by the nursing honor society Sigma Theta Tau International (see Appendix D), also allowed me to practice coding, journaling, analyzing, and creating an audit trail. The pilot results influenced the sampling design and the techniques I used for data collection and data analysis in the current study. First, because I found that pilot participants who had been diagnosed with gestational diabetes in a previous pregnancy reacted differently to the diagnosis than participants who were diagnosed for the first time, the sampling for the current study focused on participants with a first-time diagnosis of gestational diabetes. Second, because pilot participants described the process of dealing with the diagnosis as “managing” rather than as “coping,” I amended the way I asked the interview questions in the current study. Third, the differences I observed in the pilot sample between women with a first-time diagnosis and women with a repeat

diagnosis increased my interest in learning about the ways in which women are changed through the course of their pregnancy by the diagnosis of gestational diabetes.

Sample and Setting

I recruited 5 participants as the sample for the pilot (see Table 1). After obtaining an informed consent, I conducted a single, 1-hour interview with each participant in a setting she selected. Two interviews were conducted in the participants' offices; one was conducted during a fetal monitoring test in a small room at the hospital; one was conducted in the participant's home with her husband and daughter present; and one was conducted in my home. The participants chose their own code names.

Tentative Categories

Reactions to the Diagnosis

The 4 participants who had experienced pregnancies complicated by gestational diabetes reported that a first-time diagnosis was "shocking," "scary," "kind of frightening," and "stressful." Clarissa, the gestational diabetes educator, also confirmed that women with a first-time diagnosis commonly express similar reactions. Participants said they looked to health care providers to meet their need for "information" and "support" in managing the regimen, and all reported that feeling "like you have done something wrong" was a common reaction, and that it prompted seeking information, reassurance, and support.

Participants who had been diagnosed with gestational diabetes in previous pregnancies had different reactions to their second diagnosis than participants who were

currently diagnosed for the first time, and they emerged as a different data set. For example, Charlotte said, “I was expecting it ... knowing that I could cope with it 'cause I already did it once.”

Reactions to the Treatment Regimen

All participants who had ever been diagnosed with gestational diabetes reported that maintaining the complex treatment regimen was a challenge. They also reported a sense of confidence that came with mastery. When blood glucose levels were within the acceptable range given by the health care provider, participants reported feeling that they could “worry less.” In trying to keep their anxiety level down, the participants tended not to experiment with a regimen that was working for them.

During the holidays, my nutritionist worked out what I could eat. But I had [only] one bite of pie and stayed with my turkey sandwich, because I told them all it was easier for me. I didn't want to have to worry about where my blood sugars would go. —Emily

Some preliminary data patterns emerged early in the data analysis, including the following examples.

Feeling a loss of control about every 3 days. Participants expressed frustration at rapid fluctuations in hormone levels, which seemed to occur about every 3 days.

My 1-hour postbreakfast would be right down in the range where I wanted it. So I'd say, “Well, that's what I'll do every day.” That would work for a couple of days. Then I'd do the very same thing, and, like, the third day

Table 1

Pilot Study Sample Characteristics

Code Name	Age	Status
Charlotte	34	Expecting 2nd child. Diet-controlled, 2nd-time GDM diagnosis plus new-onset epilepsy and sciatica. Was paramedic, then full-time day-care provider. Had to stop working, decrease stress because of epilepsy.
Morgan	30	Expecting 2nd child. Insulin-managed, 2nd-time GDM diagnosis. Was full-time dispatch supervisor for emergency road service but recently stopped working because of sciatica.
Emily	29	Expecting 1st child. Insulin-managed, 1st-time GDM diagnosis. Full-time secretary.
Julie	36	Not pregnant. GDM in her 4 past pregnancies: 1 successful delivery with diet control; 1 fetal death during delivery despite insulin management; 1 miscarriage; 1 successful delivery with insulin management (4th pregnancy). Full-time RN and diabetes nurse educator.
Clarissa	NA	Not pregnant. GDM educator for women with GDM, included in sample to describe observed coping strategies

Note. “GDM” is the accepted abbreviation for gestational diabetes mellitus.

I'd be 180 ... and I'd think, "Nothing works. I can't control it. That part of my body is just not cooperating." —Julie

Emily said, "I like to feel in control, but not regimented ... It's a struggle about every 3 days ... The blood sugar levels change, and my routine has to change."

Committing to the developing fetus. Participants often spoke of "doing it for the baby." Charlotte said, "I call it 'won't power' ... knowing it was ... for the baby, I just had to remind myself, *I won't* [eat that]."

Dealing with the insulin. Often, treatment was another source of frustration because it required learning new skills, such as drawing up and injecting insulin, at a time when heightened stress made learning more difficult than usual.

The needle aspect of it stings a little bit. I have jabbed myself a couple of times [by accident, before the injection], and it grosses me out ... With [my first pregnancy], I cried. I was very emotional and scared at the point when I would have to inject myself. —Morgan

Dealing with the diet. For every participant, treatment involved dietary modifications. For many, the required timing, amount, and composition of daily food intake was very different from what they were used to, and sometimes difficult to learn.

Some pregnant women, especially those in economic straits, may need assistance in not only learning about diet, but also in obtaining the more nutritional food items to stay on the diet ... The biggest [help] is having someone play up the positives and be very supportive. It is very hard to switch your eating habits. —Charlotte

Reframing the situation. As Emily said, “[I] have to remind myself the diabetes is not getting worse when I have to take more insulin; we’re just tweaking.”

Internal Coping Factors

The following examples illustrate techniques participants used to help themselves manage the stress of the diagnosis.

Seeking to learn about the condition. The diabetes educators, Julie and Clarissa, characterized women diagnosed with gestational diabetes as “motivated” learners.

On the whole, [women diagnosed with gestational diabetes] are probably a much more motivated population than even women who are pregnant who have preexisting diabetes. It is very hard for women who have diabetes already, before becoming pregnant, to make some of the modifications that we ask of them. —Clarissa

Seeking information right away. Emily said, “It was stressful, and insurance problems with referrals made it worse. I couldn’t get my questions answered because I couldn’t get in to see anybody at the diabetes center.”

Seeking reassurance right away. As Emily said, “[I] want to know what caused this. I don’t feel sick.”

Seeking reassurance that the diagnosis was not their fault. Every participant had a version of the comment “You feel like you have done something wrong.” Charlotte wrote the following note on her transcript:

Pregnant women are in a higher emotional state—i.e. [*sic*], I cried at toilet paper commercials—and need to hear that they are doing stuff, i.e., the

diet, exercise, and/or medication, correctly, and they didn't do anything wrong to cause this condition.

Appraising their self-strengths. Morgan said, "I am a pretty strong person. I have had a lot of things happen in my lifetime to make me a strong individual. This is nothing in comparison to a lot of things I have gone through."

Choosing whether or not to let others help. Some participants talked about being the primary caregivers in their homes, and about how difficult it was for them to now ask for help, given that role.

I have always been the strong one, the caretaker ... I have had to let go and let [my husband do things], and also remember to keep my mouth shut. Just because he doesn't do it my way doesn't mean it's not right.

—Charlotte

Attributing a positive meaning to the experience. Several participants reported that they learned things from having gestational diabetes, either about themselves or about nutrition and other health information, that they hoped would help them and their offspring in the future.

I feel this happened for a reason. I feel like it will make me a better parent. It has made me be more understanding, learn more about my developing baby and the pregnancy. I think I am even more excited to see her, and delivery will be more rewarding, to know I worked this hard for her ... I plan to use this diet and work on myself after. I feel like I got a taste of what I am trying to prevent later in life ... I don't want real diabetes. At least I have a chance of never getting it. —Emily

Charlotte remarked about her husband, “Now he has had to be more husband, more father, more everything. He has done a really great job. I am proud of him ... This pregnancy has made our marriage better, I can say that.”

Viewing their condition as pregnancy, not disease. All of the participants who were pregnant agreed that they felt that they were experiencing a pregnancy more than a disease, as long as things were going well. All focused on “the due date” and “the goal of having as healthy a baby as possible.” A message to health care providers was, “Treat the patient as a person with feelings, responsibilities, and her own personal concerns, not just as a disease.”

Using distractions. Morgan said, “Trying to fix up our house has been a nice distraction ... My first baby keeps me busy.”

External Coping Factors

The following examples show techniques participants used to get assistance from other people in coping with the diagnosis, including what participants found helpful, and not helpful, from their domestic partners and health care providers.

Recognizing the role of social support. The role of a partner or other significant person was identified as being particularly helpful during this difficult time.

It’s just amazing. It makes me appreciate women, just, in general, what our bodies are capable of, and I think that that was something good for my husband and I [*sic*]. Immediately after [the baby] was born ... He called our best friends, whose baby was born 5 days later, and said, “You know, Doug, I never really thought about how amazing this is and what a woman

has to go through.” And he said, “Hands down, women are much stronger and have a higher threshold for pain than a man can ever imagine.” And hearing him say that, hearing him recognize what I had gone through, made my heart ache for all of the women whose husbands weren’t even allowed on the same floor when they had labor years ago. And that was really poignant for me, to feel so grateful that he recognized that and was pulling for me. —Emily

Using an internal coping method if social support was not available. This behavior is best illustrated by Morgan, who said,

This pregnancy hasn’t affected [my husband] at all. He still has cookies in the house, which I hate him for. He hates needles, so he isn’t even in the room when I inject myself. He thinks, [the first pregnancy] came out all right, so he is not as scared about [this one]. Sometimes I wish he would show a little bit more compassion, but on the other hand, like I said, I am pretty strong.

Seeking congruence of advice from health care providers. This behavior was best illustrated by Emily, who said,

[The] health care team needs to all agree. When I saw my OB and asked him a question, I went to my diabetes doctor, and then to my diabetes nurse educator, and asked them all the same question, and they all said the same answers. That was important to me. Then I had the strength and courage to stand up to my PhD aunt and tell her I was not going to take this prenatal vitamin with chromium.

Morgan mentioned that she wanted the doctors who covered for her regular doctor “to talk to one another more, and to listen to the patient’s wants and needs to make things go smoother.”

Seeking friendliness in health care providers and their office staff. The participants were especially sensitive to the perceived friendliness of their providers’ office staff.

[It is] really nice being able to go in and the receptionist says, “Hi, Morgan.” She knows me. The other receptionist says, “Hi, Morgan, how’s the baby?” And everyone knows me. It is very comfortable and comforting. I am seen a lot ... they see the ... they recognize the problem.

—Morgan

Seeking repetition of information from health care providers to make sure they understood it correctly. Charlotte said it best: “Yeah, *you* do this a hundred times a day, but this may be the first time that *they* have ever experienced something like that.”

Pregnancy Outcomes

Charlotte, who had been diagnosed with gestational diabetes once before and whose condition was diet controlled, delivered a 10-lb, 2-oz infant boy, by cesarean section due to infant size. Her infant had immature lungs and a blood glucose level that dropped to 23 mg/dL after birth, and it was 3 days before he was able to regulate his own blood glucose level.

Morgan, who had also been diagnosed with gestational diabetes once before, and whose condition was insulin controlled, delivered an 8-lb, 9.6-oz infant boy vaginally. Her infant had one low blood glucose level and five normal levels.

Emily, who was managing the diagnosis of gestational diabetes for the first time, and whose condition was insulin controlled, delivered an 8-lb, 8-oz infant girl with no complications during labor and delivery, or with the neonate.

Julie was interviewed 5 years after her last delivery. She had been diagnosed with gestational diabetes during each of her 4 pregnancies, each time at an earlier point in the pregnancy. For the first pregnancy the condition was diet controlled; for the last three pregnancies, she took insulin. The second pregnancy ended in miscarriage. The third pregnancy ended in the infant's death during delivery, a death related to the infant's large size and the mother's small pelvis. Two infants were delivered successfully, one vaginally and one by cesarean section.

What Was Learned

The most significant discovery I made in the pilot study was that women with a first-time diagnosis of gestational diabetes experience the diagnosis somewhat differently from women with a repeat diagnosis. As a result of this finding, I focused the sampling for the current study on women with a first-time diagnosis of gestational diabetes. In addition, I used the findings from the pilot in developing the conceptual and operational definitions I used for the current study.

The pilot also enabled me to practice the mechanics of taping, note taking, data analysis, and transcript management. With Emily, the last participant in the pilot, I

undertook a secondary line of questioning. I wanted to follow her, as a woman with a first-time diagnosis, through her pregnancy to better understand that process for the current study. Consequently, I conducted three 60-minute interviews with Emily. The longer interviews, I found, resulted in longer turnaround times for audiotape transcriptions, which affected the timing between interviews.

I think it is relevant to note here that the pilot study participants' verbal and nonverbal language spoke volumes about their lives as a subgroup of the high-risk pregnancy population. Grounded theory requires researchers to state their biases or assumptions, and the pilot confirmed my assumption that women diagnosed with gestational diabetes are thoughtful and knowledgeable people who share a culture with common practices and social processes, and that these processes may be discovered through language, actions, and shared interpretations.

As noted, when I began to collect and analyze the pilot data I also developed additional lines of inquiry. This is an expectation of the grounded theory method. For example, I found that I wanted to know how the context of the participants' sociocultural and economic environments affected the way they coped with the diagnosis. In addition, the context of the pilot study itself affirmed a central tenet of grounded theory as described by Glaser and Strauss (1967): Participants experience the social process of being investigated and are changed by it. Because I was gathering the stories and conducting the analysis, I learned firsthand that I, too, was intimately tied to the investigation and could not be removed from its context. Gallo and Dumas (1996), who are also qualitative researchers, have characterized investigator bias as a potentially serious negative factor in qualitative research. But it is that same bias, or perspective,

which provides an essential conceptual framework for analyzing and interpreting the data collected. As Chenitz and Swanson (1986) pointed out, each researcher's worldview is different, but none is wrong, as long as it is well described.

Definition of Terms

Strategy

Conceptual definition: The art of devising or employing plans or stratagems toward a goal (Merriam-Webster's Collegiate Dictionary, 2001).

Operational definition: Anything identified by a participant as being a means or way of staying well, or getting through the pregnancy, was considered a strategy. This included anything about the way the participant lived her life.

Gestational Diabetes

Conceptual definition: The class of diabetes termed gestational diabetes mellitus, as defined by the World Health Organization and the National Diabetes Data Group, respectively (Expert Committee, 2001/2003).

Operational definition: Gestational diabetes in a woman with average or high-risk characteristics should be diagnosed with an oral glucose tolerance test. A plasma glucose level > 140 mg/dL one hour after a 50-gm oral glucose load requires further evaluation with a 3-hour glucose tolerance test; two or more values above the normal range confirm

the diagnosis of gestational diabetes (ADA, 2001/2003). Because all study participants were diagnosed using this ADA definition, it was considered operational for this study.

Coping

Conceptual definition: Dynamic cognitions and behaviors used specifically to manage external or internal demands that are appraised as overwhelming a person's resources (Lazarus & Folkman, 1984).

Operational definition: Any belief or action a participant employs to manage an emotional reaction or reduce emotional distress was considered coping, whether or not the participant specifically characterized the belief or action as coping or was aware of using it to cope. Examples of coping include reframing a situation, or denying or exaggerating difficulties. A challenge that prompts a coping reaction may be any external or internal factor that positively or negatively affects a participant's ability to cope with the diagnosis of gestational diabetes.

Manage

Conceptual definition: To work upon or try to alter for a purpose (Merriam-Webster's Collegiate Dictionary, 2001).

Operational definition Any method or tool that a woman uses to effect a positive change in how she perceives an obstacle, threat, or learning need.

Application of Research Method

Sample and Setting

This study was conducted with 7 participants from Northern New England. Most participants were referred by nurses working in a high-risk pregnancy practice. Other participants were recruited by two nurse practitioners working in diabetes centers in two different cities. All settings were covered by the Institutional Review Board (IRB) approvals secured from the degree granting institution and the two hospital organizations involved.

The sample was a nonrandom, purposive sample with the following inclusion criteria: having a diagnosis of gestational diabetes; speaking English well enough to be understood by the researcher; being willing to participate in one or more taped interviews, and being willing to meet the researcher within a 100-mile radius. The participants' perceptions of their support were included, but it was beyond the scope of the study to interview household contacts and family members. Using the sampling techniques described by Glaser (1978, 1992), I conducted theoretical sampling according to the needs of the study. According to Glaser, theoretical sampling is a sampling type based on the needs of the theory; "theoretical" does not mean "hypothetical" or "speculative." In grounded theory, the data collected and analyzed guide the researcher toward data gaps, which prompt further theoretical sampling. It is in keeping with the method to sample different populations within a topic area who might share similar concerns. The process of constant comparison yields data that explain the differences and similarities between participants. Accordingly, as hypotheses emerged during data

collection and analysis in this study, the sample was enlarged to include women who had a prior diagnosis of gestational diabetes and were not currently pregnant as well as women who were experiencing other types of high-risk pregnancy. I reached saturation in the data after conducting a total of 17 interviews with 7 participants; 5 participants were interviewed three times, and 2 participants were interviewed once.

The 7 participants assumed the pseudonyms of Emily, Sarah, Haley, Molly, Monica, Gail, and Shelby. Because Emily was in the pilot study, her pattern of interviews was somewhat different from that of the other participants, and more data were collected. This sample included 4 participants with a first-time diagnosis of gestational diabetes (Emily, Sarah, Molly, and Shelby); 1 participant who had been diagnosed just days before the delivery of her last child but had not yet experienced treatment (Monica); and 2 participants with a repeat diagnosis (Haley and Gail). My interviews with Emily took place at her office; with Sarah, in a quiet corner of a hospital coffee shop; with Molly, in her hospital room; with Shelby, in the exam room of her high-risk obstetrician's office; with Monica, at her rented mobile home (once) and at her new house (twice); and with Haley and Gail, at their respective houses. All locations were self-selected by the participants as comfortable places to talk.

Theoretical sampling guided the research. The first two participants, Emily and Sarah, had a first-time gestational diabetes diagnosis without other known complications. From there, I searched for diversity within the first-time gestational diabetes diagnosis; diversity in the data is the goal of grounded theory (Glaser & Strauss, 1967). Molly, who had a first-time gestational diabetes diagnosis, was also diagnosed with an incompetent cervix and preterm labor. She had experienced two prior fetal early losses, and her

current pregnancy was the first to carry to viability. Gail was chosen next to test my hunches about the importance of support and education because she had been diagnosed with gestational diabetes in both of her pregnancies. She was asked to compare the treatments for gestational diabetes of 12 and 8 years ago; to describe her perceptions of differences or similarities between her two pregnancies; and to describe what she would tell women newly diagnosed with gestational diabetes, now that she had been diagnosed with type 2 diabetes 4 years after her last child's delivery.

Next, I wanted to find a participant with a first-time diagnosis of gestational diabetes with other coexisting conditions. I was looking specifically for a participant who had a coexisting condition that was not obstetrics related. Shelby had a first-time diagnosis of gestational diabetes and coexisting first-time, high-risk pregnancy diagnoses. She had a diagnosis of preterm labor and had had abdominal pain that resulted in a second-trimester abdominal surgery without visible cause found. She continued to use narcotic pain medication after the surgery. She also had an empiric diagnosis of Munchausen's syndrome. After Shelby, Monica was chosen because she had a first-time diagnosis of gestational diabetes coexisting with two prior high-risk pregnancy diagnoses. At the time of the interviews, she was in her third pregnancy. She had experienced two of her high-risk diagnoses, an incompetent cervix and preterm labor, with all three pregnancies. Haley was chosen next because she not only had a repeat diagnosis of gestational diabetes, she also had a coexisting repeat high-risk pregnancy diagnosis of preterm labor.

Human Subjects Protection

An IRB approval from the degree-granting institution was initially granted in May 1999 and renewed in August 2000, July 2001, and May 2002 (see Appendix E). An IRB approval from a hospital organization was initially granted in July 1999 and renewed in June 2000, January 2002, and January 2003 (see Appendix F). An IRB approval from a second hospital organization was granted in February 2002 (see Appendix G).

Each participant was informed that no physical risks would come to her if she chose to participate in the study. Each participant was told to report to the researcher if she experienced any emotional discomfort as a result of sharing potentially difficult personal feelings. If she felt a need to speak to someone else, she was told that she would be referred to a social worker or private counselor. Each participant was informed that she could withdraw at any time and that withdrawal would in no way affect the health care she was presently receiving. Each participant was also told that if she withdrew from the study, her story would be eliminated from the inquiry; the transcript of her interview would be given to her, and the audiotape would be destroyed. No participants withdrew from the study. The participant who also had probable Munchausen's syndrome lived in another state and did not drive. I connected with her by phone and met her at her provider's office once. This participant told me that she was willing to meet with me again, but, despite several attempts, subsequent meetings never occurred, owing to various circumstances.

Each participant read and signed an informed consent and was then provided with a copy (see Appendix H). Interviews were transcribed verbatim by transcriptionists I had hired and trained in confidentiality policies and practices. Participant confidentiality was

assured by having each participant select a code name of her choosing that would at no time be paired with identifying information. All transcripts were kept in a location separate from any identifying information and were stored in a locked file in my home. In accordance with the IRB requirements of one institution, the tape-recorded data will be destroyed in the summer of 2004. The transcripts and the data within the software program will be retained for continued analysis. Signed informed consents will be kept for possible review until the summer of 2006.

The benefits to the participants were having the knowledge that they were contributing to a holistic view of living with gestational diabetes, and having an opportunity to share their personal feelings. There was no monetary payment to the participants.

Data Collection

I conducted tape-recorded, open-ended, semistructured interviews in an environment of the participant's choosing. To complement data collected from interviews, I conducted chart reviews when the interview setting made a chart available and the participant granted written permission for a review. The consent form was designed to allow participants to grant permission for review of their chart separately from their consent to be interviewed. The object of the chart review was not triangulation, which seeks convergence of the data, but augmentation of the data for a broader and deeper understanding of the phenomenon (Knafl & Breitmayer, 1991).

The interviews began with questions about the woman's due date, time elapsed since her diagnosis, her age, whether this was her first pregnancy with gestational

diabetes, and whom she perceived as her social support. Then the interview moved on to open-ended questions (see Survey Instrument, Appendix I). *Tell me about this pregnancy. What has it been like since you were told you have gestational diabetes? Tell me about a memorable event, good or bad. What has your family done that was helpful? Not helpful? What have your health care providers done that was most helpful? Least helpful? Has anyone indicated what your likelihood is of having this condition beyond pregnancy? What have you found most helpful that you do for yourself?* From there, more probing questions were asked, such as, *You said _____; can you tell me more about that, or explain it to me?* Once the initial participants told their stories and a hypothesis began to emerge, subsequent participants were asked questions to verify the hypothesis, for example, *Another woman diagnosed with gestational diabetes said _____; have you had this same experience?* The same survey instrument was used as a basis for interviews with all participants. However, there was considerable variation in the follow-up questions asked during each interview.

The study had 7 participants for a total of 17 interviews. In keeping with the method, sampling was directed by ongoing, constant comparative data analysis. One participant, Emily, was included from the pilot study because she was a woman with a first-time diagnosis of gestational diabetes. I interviewed 5 of the participants for 30 minutes three times each over the course of their pregnancy. When feasible, I tried to obtain two interviews before delivery and one after delivery. I interviewed 2 of the participants only once. One was pregnant, and the plan was for repeat interviews, which never occurred, before she delivered. The other was postdelivery by many years, and I felt that one interview was sufficient.

I was the sole interviewer. I audiotaped all of the interviews, with permission from the participants, except one of the interviews with 1 participant, who asked me to just “take notes” for her third interview. I used two transcriptionists I had trained in confidentiality practices; they would e-mail the transcripts and either mail or hand deliver the cassette tape to me. I would listen to the cassette tape and fill in words, from memory and from my field notes, that the transcriptionist had not been able to pick up. As a member check, each transcript was then either taken to the next interview with the participant or mailed to her for review and comment on accuracy. Although the participants seldom made changes, occasionally they would amend what was said to what was *meant*, fulfilling the purpose of member checks. As soon as data had been verified as accurate, I would begin their analysis.

Sampling ended when the data reached saturation. Data saturation, the end point of category development, occurs when no new data are expressed or found. I achieved data saturation in this study by constantly comparing incident to incident, and, eventually, incident to developing theory, while remaining open to new data and new experiences from multiple data sources. Those sources included observations, interviews, interactions with colleagues, interactions with my biases, my prior obstetrical experience, and reviews of the scholarly and consumer literature. I examined patterns and variations within the data, purposively searched for undiscovered data, and tested hypotheses as they developed, all in keeping with grounded theory methodology. Thus I was able to identify, describe, and, ultimately, interpret the elements that were central to the emergent theory.

Data Analysis

Data were coded at multiple levels following the original method of constant comparative analysis developed by Glaser and Strauss in 1967. Data from the interviews and from any charts were coded line by line to identify themes. The themes that emerged were tested against incoming data to identify categories. Data collection and analysis continued until no new categories emerged.

Data from the pilot study had been coded and analyzed manually. During the current study I used both manual methods and QSR N6, a form of NUD*IST. This particular software was being promoted by qualitative researchers internationally as a way to help manage the large volumes of data generated by qualitative research. I used QSR N6 primarily for its text-searching functions and initial open-coding functions. The software made it possible to ask some basic questions of the data, essentially like an advanced Boolean search. I could search for text passages included under one code and also see if those same passages were included under another code. This process helped determine overlap of ideas, enabling me to begin to hypothesize and validate possible reasons for the overlap. I could also search text for one or more codes and indicate, for example, that text from another certain code should be excluded to fine-tune categories. This function was helpful in determining and tracking the intertwining of concepts because particular categories, subcategories, properties, and dimensions could be diagrammed. I plan to continue analyzing study data using QSR N6 to try to develop further theoretical refinements for future publications.

Concept Analysis

In the current study, I followed Glaser's (1992, 1998) use of data sources. Model cases, which Glaser called ideal cases, were developed. Contrary cases per Walker and Avant (1995), which Glaser called negative cases, were also used. I consulted professional literature to substantiate and build or refine concepts during their development to categories. Then the categories were interlinked to build theory. The ideal and negative case examples for all the major concepts identified in this study are discussed in the conclusions chapter.

Validity and Reliability

When semistructured interviews or observations are the major source of data, validity and reliability are not treated as separate measurement issues but are addressed in the research design. This study followed the principles of the grounded theory method first described by Glaser and Strauss in 1967 and later refined by Glaser in 1978. The sample included a diverse group of women diagnosed with gestational diabetes. During the research process, the emerging model was confirmed with subsequent participants. As concepts emerged they were formulated into categories, and women whose experiences were presumed to be different from those described by participants were sought for inclusion in the sample. Interviews were critiqued for areas of researcher bias, and transcriptions were checked for accuracy.

Professional colleagues and study participants reviewed and critiqued the data throughout the process of collection, analysis, and shared interpretation as well as during discussion of the work in written, poster, or oral presentation formats. These efforts to verify the findings increased their accuracy and their credibility.

At my request, a faculty member from my degree-granting institution reviewed the transcripts from the pilot study to verify my coding practices. Later, I met with a member of my dissertation advisory committee (Beal) to review the transcripts of my interviews with the first 5 participants in the current study. This committee member evaluated and validated my use of initial open coding and reviewed the tentative theoretical model after about seven interviews had been conducted. This committee member indicated that I was reaching saturation in many of my categories and agreed with me that 1 participant was serving as a negative case during data collection and concurrent analysis. She encouraged me to trust the data and to begin secondary lines of questioning to further validate the theoretical model and emerging hypotheses. As the model developed, I continued validation with subsequent participants.

When the theory was more developed and data collection was coming to a close, I met with a different dissertation advisory committee member (Rog) to discuss how to analyze and focus the voluminous data for written presentation. This committee member helped identify ways to collapse the categories and begin displaying the results. In the course of developing the theoretical model I also met with three other colleagues, doctorally prepared in mental health, for suggestions about existing theoretical frameworks to compare with the theory emerging from the data in this study.

From there, I validated the information by reviewing drafts of the Results and Conclusions chapters, and supporting quotes, with 2 participants. This validation was arranged through telephone calls made to all of the participants in the current study, and several of the participants in the pilot study, to offer them the opportunity to meet with me to review the data. I explained that this extra meeting was outside the scope of their original agreement to participate in the study and that no one was in any way obligated to do it, and I offered to pay for lunch. By that time, the telephones of two of the women, Shelby and Charlotte, a pilot study participant, had been disconnected with no new number given. I reached 4 participants who agreed to help with this process, but 2, Emily and Monica, could not meet on my available dates. In early February, I met once individually with 2 participants in the current study, Sarah and Haley. Sarah has a high school diploma; Haley has a master's degree. I showed them both early drafts of the Results and Conclusions chapters along with the interview quotes the QSR N6 program had identified for each category and its properties; quotes from Emily were used as illustrations most frequently, in part because she had supplied more data than the other participants. Sarah and Haley confirmed the emerging theory, stating that the tentative conclusions made sense to them in light of their own experience.

Just prior to writing the final draft, I sought further validation through verbal member checks and was able to connect with participants Sarah and Haley once more by telephone. Each expanded on earlier comments, and I made minor adjustments to the explanation of one category.

In Glaser's methodology, analysis is ongoing. Interactions with the data and with presentation of the data spark new thoughts. The early theory was presented as a poster at a national nursing meeting and as a paper to 12 local nursing faculty colleagues, most of them doctorally prepared. Both of these presentations served to hone my description of the theory, explanation of the concepts, and communication of the theory's application to nursing. After writing one draft of the dissertation for three of the members of my advisory committee and two drafts for all of the members, I presented findings from the current study at the Annual Meeting of the International Nursing Honor Society. This presentation helped me to further define clinical interventions for testing in future studies.

Summary

For this study, I interviewed 7 women for a total of 17 interviews and analyzed the data from the interviews and other data sources. Using Glaser and Strauss's (1967) method of concurrent theoretical sampling, data collection, and constant comparative analysis, I developed categories from which a midrange nursing theory emerged. I attempted to build on grounded theory's strengths by considering a multiplicity of viewpoints in order to minimize bias, and by giving participants the opportunity to be heard in their own words. The theory that emerged from this process is an interpretation of the experience of being a woman diagnosed with gestational diabetes.

Chapter 4

RESULTS

The goal of the study was to discover the coping strategies used by women diagnosed with gestational diabetes. The participants provided considerable data about the phenomenon. The data were initially organized according to Glaser's (1978) widely used theoretical codes, the 6 Cs: causes, contexts, contingencies, consequences, covariances, and conditions. The theoretical framework provided by the 6 Cs helped to define the participants' social reality and was used as a concept-mapping tool to identify the core category of the emerging theory. Organizing the data in this manner created a functional structure that allowed interrelationships in the data interpreting social reality to identify, explain, and interpret social process. The structure was useful only until the basic social process emerged as the core category. Once the core and interlinking categories were realized and tested, terms used to describe the data were either modified or kept.

In this chapter, I discuss my interpretation of the participants' social reality as it was revealed to me, using direct quotes and case examples to illustrate points that are central to the emergent theory. Illustrative quotes are not used as extensively with grounded theory methodology as they are with some other qualitative methodologies. Glaser (1998) discourages using multiple illustrations of a phenomenon, such as quotes from several participants to support the same theme, a practice he has labeled *incident*

tripping. In grounded theory, the emphasis is meant to be on interpretation, with efforts made to maintain the voice and intent of the participants.

Characteristics of the Sample

During the study period of June 2001 to September 2002, I conducted 17 interviews with 7 participants residing in Northern New England. Previously, from November 1999 to January 2001, I had conducted a pilot study with 5 participants. With the approval of the dissertation advisory committee, data were included in this study from 1 participant in the pilot; this participant was the only woman in the pilot who was experiencing a first-time diagnosis of gestational diabetes. Since the current study focuses on the experience of women diagnosed with gestational diabetes for the first time, the inclusion of this participant's data made sense.

Participants of varying socioeconomic status, educational level, and identified support systems were purposively chosen to achieve sample diversity. However, all participants were Caucasian and resided in two neighboring states. Because the purpose of grounded theory is to present the social reality of the sample and interpret patterns and variations among the data for analysis, the participants' living situations at the time of their interviews are briefly described to afford the reader a context in which to place the participants' illustrative quotes. For this reason, the participants' situations are described in the past tense.

Emily, 28, had a 4-year college degree. She had a first-time gestational diabetes diagnosis without other known complications. At the time of the pilot study, she was working full time as a secretary. At the time of the current study, she was working more than 40 hours a week in a salaried professional position at the same organization. Emily was married to a man who also held a salaried position. They had purchased their home a few years prior to the pregnancy. She did not drink or smoke. She was comfortable with her urban environment and had many friends. Emily reported being close to her parents and in-laws, who resided in another state in the Northeast.

Sarah, 32, had graduated from high school and had held retail and receptionist-type positions. At the time of her interviews, she had a first-time gestational diabetes diagnosis without other known complications. Just before the final dissertation draft was written, she reported that she was at 16 weeks gestation in her second pregnancy and was now injecting insulin. Sarah was married to a man who had worked in his family's thriving auto-mechanic business since graduating from high school. They owned a home on five acres in a sparsely populated, rolling-hills residential area and earned enough so that she could afford not to work during the entire pregnancy and after delivery. His family lived in the same town, and Sarah reported that they were close to them emotionally. Sarah said she was also emotionally close to her mother, who lived an hour's drive away, but that the rest of her family and friends were more emotionally distant and lived in another state in the Northeast. Sarah was a nondrinker and nonsmoker.

Gail, 38, was 22 at the time of her first diagnosis of gestational diabetes and 26 at the time of her second diagnosis. She was not pregnant at the time of data collection. Gail

had graduated from high school, and at the time of her interview was collecting state disability for carpal tunnel disorder resulting from millwork. She was married to a man who also collects disability income, for health problems related to his back. She lived in the rural, mountainous community where she was raised and had recently moved into her grandmother's home with her two children. Her grandmother no longer lived in the home, and Gail and her husband were paying her rent of \$50.00 a month. Gail smoked cigarettes but did not drink alcohol, although she reported being "addicted" to Pepsi. Gail said she wished she had known about diet sodas' "being less sugar for the baby" during her pregnancies; she had switched to Diet Pepsi only after she was diagnosed with type 2 diabetes. She couldn't recall any problems with transportation to doctors' appointments, even when she did not own a car, because "there was always someone around to give me a ride." Gail reported that her husband was her main support during the second pregnancy, but that she felt alone during her first pregnancy because the father of that baby had left her. She reported that since her diagnosis with type 2 diabetes, her husband, children, family, and friends were her main supports. Diversionary activities, such as surfing the Internet, reading, and watching TV, also helped her to cope.

Molly, 27, had graduated from high school, as had her husband, who worked in a technical trade an hour's commute from their home. She had a first-time gestational diabetes diagnosis with coexisting high-risk pregnancy diagnoses of preterm labor and an incompetent cervix. Molly had held low-paying, semiskilled employment in the past. Because of the couple's efforts to have a child, given her history of two prior fetal losses, Molly had been on activity restrictions much of the preceding year and had not been employed during that time. Molly reported that she and her husband were emotionally

close to their parents, families, friends, and small-town, coastal-area church. Both sets of parents helped them financially. Molly reported that she had peers with a gestational diabetes diagnosis who were invaluable and that she also drew on her own spiritual strength, personal reflection, and a multitude of diversionary activities to help her while she remained on months of bed rest, often in a hospital. She did not drink or smoke.

Shelby, 22, had obtained her GED, and her husband had graduated from high school. She had a first-time gestational diabetes diagnosis and coexisting high-risk pregnancy diagnoses of preterm labor, a second-trimester abdominal surgery followed by continued use of narcotic pain medication, and an empiric diagnosis of Munchausen's syndrome. Shelby had worked as a health care aide prior to undergoing abdominal surgery earlier in the pregnancy. Her husband was a salesman. They required financial help to maintain their standard of living. She had "filled out the paperwork" for several agencies and knew that she qualified for financial assistance but kept forgetting to "drop the paperwork off." She did receive WIC. Her mother and sometimes her father transported her to all of her appointments; they also paid for her medical supplies and helped her by cooking suppers occasionally. She said that she "gets along" with her mother-in-law but was not close to her. Shelby and her husband lived next door to her parents; his parents have always lived on the outskirts of the same small city. Her high school friends were "still around," and she could talk to them on the phone. She reported that her dog was her "buddy." She was a nondrinker and nonsmoker.

Monica, 30, had married her second husband in the local Wal-Mart, because it was "free and always available," only weeks before her husband lost his "good-paying" mill job and she learned that she had an unexpected pregnancy. She had a repeat

gestational diabetes diagnosis but was experiencing treatment for only the first time. She had two prior high-risk pregnancy diagnoses, preterm labor and an incompetent cervix. Monica and her husband had high school diplomas. He collected unemployment compensation and worked in construction jobs with his brothers for payment “under the table.” They both had children from prior relationships and were looking forward to having a child together. She was receiving WIC, food stamps, and child support for her other two children. Monica had enrolled in Medicaid for herself and her unborn child when her husband’s insurance ended. She and her husband were applying for a mortgage on a small home in a sparsely populated, mountain-foothills location and were hoping to close before the bank could “find out” that he had lost his job. In addition to her husband, Monica had several childhood friends and former work associates upon whom she could lean. She reported that she was emotionally distant from her alcoholic mother, who had been diagnosed with breast cancer during Monica’s current pregnancy. Monica was a chain-smoker but reported being an adamant nondrinker.

Haley, 33, had a master’s degree and worked part time as a teacher until the end of her pregnancy. She had a repeat gestational diabetes diagnosis with a coexisting repeat high-risk pregnancy diagnosis of preterm labor. After her delivery she decided to take at least 1 to 2 years off from working. Her husband worked in a prestigious professional occupation and his income supported their family of five, their stately, 4-year-old home in a new cul-de-sac suburban subdivision, and their two new vehicles. She reported that before the pregnancy she would have an occasional glass of wine, but she did not smoke. Haley said that she and her husband were emotionally close to her parents, who lived

nearby, and to their college friends, neighbors, professional associates, and his parents, who lived an hour's drive away.

Developing the Categories

In addition to interview data, I used field notes; chart records as they were available; and substantive, process, and theoretical memos. As concepts emerged, I consulted and analyzed new literature, which was also considered and treated as data. Data were analyzed using the constant comparative method. According to Glaser (1998), in constant comparative analysis the researcher is continuously asking three questions: “What category does this incident indicate?” “What property of what category does this incident indicate?” “What is the participant’s main concern?” (p. 140). I implemented the constant comparative method both manually and using the qualitative analysis software program QSR N6. Data were coded line by line, the codes were categorized, and the categories were analyzed to determine the ways in which they interrelated and explained the data. At this stage in the analysis, the literature was consulted for additional explanations of the data. As the data confirmed them, properties were defined for each category, and the dimensional range of each property was identified (see Appendix A).

The following categories were derived from the data and arranged in Glaser’s (1978) theoretical framework of the 6 Cs:

1. The *context* of the basic social process was *getting diagnosed with gestational diabetes*.
2. The *condition* associated with getting diagnosed with gestational diabetes was *stress*.
3. The *cause* of the stress was *perceived threat*.

4. The *consequence* of not managing the perceived threat was to the *health of both*.

5. The *covariance* of health of both was *time to delivery*.

6. The *contingency* affecting time to delivery was *medical intervention*.

From this beginning model, I was able to form hypotheses, or hunches (Glaser, 1998), and test them by validation from interview data and observation. The core category identified at this stage of analysis was *commitment to the fetus*. Three additional categories were also identified during analysis: *importance of social support*, *importance of immediate information*, and *other coping strategies*. Descriptions follow for each of these categories, with a discussion of how they were derived and how they were later incorporated into the three categories that best explain the data.

Participants were told in advance that I was interested in hearing about pregnancies with a diagnosis of gestational diabetes. Essentially, the phenomena of interest were “How do women cope with gestational diabetes?” and “What coping strategies are used by women diagnosed with gestational diabetes?” These questions were not asked directly. The pilot study had shown that asking participants how they “coped” with an experience implied to them that the experience was a negative one. Because of this finding, in the current study I used the word *manage* rather than the word *cope* during data collection.

Getting Diagnosed With Gestational Diabetes

In the theoretical framework using the 6 Cs, *getting diagnosed with gestational diabetes* was the main context for the participants' concerns. All of the participants reported that the first 2 weeks after diagnosis "is the time you are most affected," and that "after that, things get a little easier." The reader will see variations and patterns in the participants' initial reactions to being diagnosed.

The participants were asked "What was it like when you were first diagnosed with gestational diabetes?" The majority of participants with a first-time diagnosis reported being "shocked" and "panic-stricken." Molly said, "I was very surprised ... They didn't think that I had risk, really, of the diabetes, based on family history ... I was shocked." And Emily said,

I have not had any friends or family that have been diagnosed, so I think that I freaked out a little bit more than a lot of people ... I was pretty panic-stricken. "Omigosh! What does this mean for the baby? What does this mean for me? Will the baby be healthy, or be okay?"

When recalling her reaction to her first-time diagnosis, Haley said,

I'm actually probably the only person that I know that [*sic*] doesn't like sugar. I don't like it, so I don't eat it at all. I didn't think that I fit the profile of someone who would get diabetes ... I really thought that there had been a mistake, and that either I did the test wrong, or I didn't wait long enough.

Similar sentiments are also described in the literature (Ahlers & Ahlers, 1991; Rotondo, 1990; Rotondo & Coustan, 1993).

In contrast to her reaction to the first-time diagnosis, when she recalled her second diagnosis Haley said only “I guess I was kind of disappointed that it had happened again.” This milder reaction to a repeat diagnosis is supported by data from the pilot study, in which 4 participants talked about how different it was to be diagnosed with gestational diabetes the first time compared with being diagnosed in subsequent pregnancies. With a repeat diagnosis, they “kind of expected it” and said they knew they “could get through it” because they “had before.”

A participant in the current study, Monica, had a repeat diagnosis but had not experienced the treatment regimen before, because she had not been diagnosed in the previous pregnancy until shortly before delivery.

I was expecting it ... We had actually talked about it on my first initial visit. We had talked about all of the risks, one of them being my age, which, from what I have read, is part of the risk of gestational diabetes. And, where I had it with my last child, it was already something we kind of broached on the first appointment ... and she told me it was time to start watching my diet and stuff. When she was getting ready to do the test, I wasn't a bit surprised ... [Yet] I thought ... [being diagnosed] would ... be easier then it actually was.

The other exception to the shocked and panic-stricken reactions experienced by the majority of participants with a first-time diagnosis was Shelby. This participant had an empiric diagnosis, from both her regular and high-risk obstetricians, of Munchausen's

syndrome, a psychiatrically diagnosed condition characterized by pleas for medical attention using a history and symptoms of acute but imaginary illnesses. (The diagnosis was termed empiric because Shelby refused psychiatric evaluation.) Shelby described a low-key reaction to her first-time diagnosis of gestational diabetes, saying only, “I just accepted it. Nothing else has really gone right with this pregnancy. So it was just one more thing to add to the list.” Shelby served as a negative case throughout theory development (Glaser, 1992) because she differed from the other participants in several areas described in the Results chapter.

I had identified the category *getting diagnosed with gestational diabetes* early in the pilot study through listening to the participants’ shock, panic, frustration, and disappointment at the diagnosis. It was quickly evident that the women who were diagnosed with gestational diabetes for a second time did not have the same reactions. They coped or managed differently because they “had done it before” and “knew what to expect.” For this reason, the current study purposively sampled women diagnosed with gestational diabetes for the first time, with and without other high-risk diagnoses or comorbid pregnancy conditions. Data collection and analysis focused on what the pregnant women were experiencing. Partner and family reactions to the diagnosis were beyond the scope of the study.

The properties of the category *getting diagnosed with gestational diabetes* encompassed the participants’ personal histories of coping or managing, including whether or not they had used positive coping behaviors to resolve an experience in the past. In developing the properties for this category, I examined the data for the following information: How many coping or managing behaviors have participants used in the past,

a few or many? How effective were they? Can they remember them, and have they tried them with this diagnosis? Can they think of any new ones? Are they capable of learning some new ones? Who will teach them? How, where, and when? Do they view this diagnosis as a challenge, or as a threat? Do they have a self-perception of mastery, or do they see themselves as a victim? The dimensional ranges of the properties are generally broad.

The data from participants showed variations, but several patterns were easily identified. Most obvious was the impact of the diagnosis. For most participants with a first-time diagnosis, the diagnosis was a life-altering experience. They needed to make several immediate lifestyle changes to accommodate their lives to the new diagnosis. Lifestyle changes are never easy, and having to learn them all in a short period of time adds to the burden. Participants knew they needed to make changes quickly to positively affect the outcome for the infant; *immediate information and support* were prominent conditions for this category. When they had appropriate information and support, participants felt that the impact of the diagnosis was lessened and they could better attend to the problem at hand and focus on fixing it as best they could.

It seemed to take most participants about 2 weeks before they felt that they had to move on to the next stage, whether or not they had resolved their reaction to being diagnosed. The consequence of not having information and support at this crucial time was an emotional crisis. The perceived consequence of not managing blood glucose levels was an adverse perinatal outcome for mother or infant, which motivated the participants to try to regain a sense of control of at least one aspect of their lives. One

method used by all of the participants, in varying ways and to varying degrees, was to learn about the diagnosis, treatment expectations, and probable outcomes.

A question I asked participants was “Can you explain why, for you, the anxiety was around the diagnosis and not around the treatment?” The following answer, given by the participant using insulin during her pregnancy, is representative; Emily felt greater anxiety about the diagnosis than about learning to inject herself.

[I]nitially I had so little information about gestational diabetes that I was afraid for [the baby]’s health. And it wasn’t about me; this was not about me. It was about what I could do to protect the baby, and that was what the value was. And so when I found out that it could be as simple as monitoring my diet and checking my blood— that’s a lot different than needing a major surgery, or that she could have some sort of birth defect because of this, which of course, she could have if I had not managed it. But it just made so much sense that once I had the information ... I felt empowered. It was that threshold again. I was back in control. I knew what I needed to do; I just needed to step up to the plate and do it. And once I could reach that point, that’s all that I needed to know.

Monica was a little different from participants with a first-time diagnosis. She had been diagnosed once before, very close to the end of a previous pregnancy, but had not experienced treatment until the current pregnancy. She was surprised by how the diagnosis affected her even though she “expected it.” She did not know what the treatment would entail but soon learned that the doctor’s parting advice on nutritional treatment was not nearly as easy to carry out as it had sounded.

The doctor said to watch my carbohydrates and stop eating sweets, so with that information I started reading books and talking with friends that [*sic*] would have knowledge in that. I have learned there is a lot more to it than I thought when the doctor told me. [When I left the office, I felt] pretty much panic and anxiety. Because of the diabetes you think about injections and insulin and all those things, plus the fact that where it is already a high-risk pregnancy [with a history of all preterm births], you worry about the effects on the baby.

The diagnosis of gestational diabetes has both acute and chronic components. Along with the initial surprise and problem-focused aspects of what the diagnosis meant for them and their fetus in the short term, there was an aspect of the diagnosis that stayed with the participants. Even after delivery, they expressed strong emotions about the diagnosis, as though they had been permanently changed by it. They had been part of something that most pregnant women do not have to go through, and although they would not have wished the diagnosis on anyone else, most participants felt that they had learned something of value about themselves and their partners, and had identified coping skills they intended to use in the future, because of the diagnosis.

It's like my badge, it's what I've gone through, and we all have our stories about labor and our pregnancies, but I think that that extra challenge of the gestational diabetes— it has changed me intrinsically. It's made me see things differently, and it's made me pay more attention to my body and to look at things in a different perspective ... Another good thing ... if and when I develop this later in life, it's going to be easier for me because at

least now I have so much information and so many resources that I didn't have when I first found out. —Emily

Molly expressed a different perspective, however. Her three interviews were all conducted predelivery, and because she had had two prior fetal losses she was looking at the chronicity of the diagnosis as affecting her more than the baby. She said,

I have thought about it with myself. Because even after the baby is born, to periodically check my sugars just to make sure they are maintaining where they should be and that it's not developing into type 2 diabetes ... for myself. So that is something that my husband and I have thought about, and we are going to keep an eye on, just to make sure.

When I asked Molly about her thoughts regarding the infant, she said, "Um, well, I hadn't really given it a thought, about the baby, at this point."

Other less dramatic changes were also reported. For example, Haley commented that seeing a nutritionist and analyzing her diet had caused her to look at what her children ate and to "realize that I might be setting them up for the same pattern that I have."

Regaining a Sense of Control

For the category *getting diagnosed with gestational diabetes* I have described the array of participants' initial reactions. Data analysis revealed that the first reaction period was immediately followed by a phase in which participants felt anger, frustration,

betrayal by their bodies, and concern and worry for themselves and their unborn child. In this second reaction phase, participants were clearly focused on what they could do to lower their anxiety and stress. The term *stress* was interpreted by the participants, and by me, as an unpleasant feeling of mounting anxiety that could either sharpen the participants' focus and improve their ability to attend to the tasks at hand, or become so out of control, in reaction to actual or perceived threats, that participants feared they could not function at all. The term for this category, *regaining a sense of control*, was derived from the participants' terms *fear of the unknown* and *loss of control*. *Regaining a sense of control* was felt by the participants, and by me, to best describe and interpret the data, and to capture the characteristic emotions of this phase. The category is a synthesis of *perceived threat*, *stress*, and *health of both* as cause, condition, and consequence. The reader perhaps can begin to see how the 6 Cs became subsumed by category terms that seemed best to fit the data and interpret the participants' main concerns.

Stress

I asked participants "What does a woman mean when she says that the diagnosis of gestational diabetes is stressful, difficult, or scary?" The following replies illustrate *frustration*, *betrayal by their bodies*, *concern and worry for themselves and their unborn child*, *fear of the unknown* and *loss of control*, properties I analyzed for the subcategory *perceived threat*.

The stress of it is basically worrying about the different changes in lifestyle and ... how severe it's going to get ... realizing that not only do you have to deal with this ... but you also have to do the dietary changes,

which means either making your whole family switch over to your way of eating, or doing double meals ... —Monica

These are all fears of the unknown, particularly if you are like me and did not know someone who had had it before ... I didn't know how my baby would be, I didn't know if I would be okay, and I didn't know what I would need to do to cope ... That's where the emotion came out with the whole gestational diabetes diagnosis and treatment, because I could potentially be jeopardizing my new baby. My own body might not be the safest place for my child. —Emily

[It was] stressful in that I didn't know what the outcome was going to be for my baby. Was I going to have a really large baby? Was it going to be really early? So that was probably the scariest part. Just not knowing, which then adds stress to you because everything you put in your mouth, you're thinking, "Oh, my gosh, this is going right to my baby." Are they [*sic*] going to be too big? ... But my babies come too early to really get to full term. So I guess, just the stresses of not knowing. —Haley

The anxiety participants experienced followed an identifiable pattern. The first, and most severe, time of angst came in the 2 weeks following the diagnosis. The second time occurred whenever participants' blood glucose levels exceeded the range they were comfortable with, which seemed to happen about every 3 days. The third time of angst occurred when the birth event neared. Conditions that appeared to make any of these predictable times seem even more difficult for participants to manage included feeling fatigued or being otherwise compromised. The following quote illustrates the conditions

that created increased frustration for all of the participants. This quote is used because it not only displays a common condition of their frustration, it also mentions the pattern of how often frustration could be expected, the woman's reaction to it, and an example of a supportive partner's helpful statement.

I almost had a bewitching hour in the evenings when I was tired ... After taking my sugars ... I would have a mini-meltdown. And there was my husband saying "It's okay. You didn't eat anything you weren't supposed to. Your body's having a hard time." And I definitely was having a really hard time at night ... So, personally, it's been a struggle, I think. Just about every 3 days I'll have a moment where I'll just be in tears, frustrated. Never feeling victimized, like, "Why is this happening to me?" but just frustrated with "Why can't I get this right? Why isn't what I'm doing working?" And I think that is the most frustrating. —Emily

Another participant reported that stress triggered a desire for carbohydrates.

[W]hen I'm stressed, I do tend to eat in between ... and the things that I'm drawn to are carbohydrates ... [M]y break will ... normally be to grab something, like even a big piece of bread with butter on it or something. So I do. It is harder when I'm stressed ... I definitely eat when I'm stressed. —Haley

After identifying many of the emotions that followed diagnosis, I discovered what participants meant when they said the diagnosis was stressful, difficult, or scary. I then discerned a pattern to their anxiety, which became worse at predictable time periods.

These periods were the first 2 weeks after diagnosis, whenever blood glucose levels were high, and just before delivery.

As a follow-up question, I asked “Why is managing or controlling the impact of the diagnosis and stress important?” Emily’s answer is representative:

For me, this was pretty cut and dried. What happens when it’s not relieved, then it just flies into the cycle of “My sugars are bad, and the stress is making it happen, and if I continue to be stressed then the sugars are going to be high, my body’s not going to process them well.” And I can definitely see getting into the mindset, “Well, it doesn’t matter what I’m doing anyway, so I don’t need to do anything.” ... I think that the flip side of that, of course, is when you can see that [when] you’ve been more relaxed and been eating properly the numbers are better. And, of course, with this gestational diabetes ... there are going to be times when these things happen. I think that it’s, again, looking at patterns and not just hooking in on one particular meal or one particular time unless you’re seeing a pattern, and that’s what’s made the difference for me.

Monica reported that she had “been working on different ways to deal with my stress and anger management” in her response to the question of why managing the impact was important for her own situation. She had earlier described feeling stress and frustration from working to decrease blood glucose levels and seeing the connection between increasing frustration and downright anger. She knew that she had a problem with anger management and that stress was a known trigger for her. She was in an anger management group, in part, to control her response to frustrations, such as fluctuations in

her blood glucose level, because she did see that her anger increased her blood glucose levels and also was not helpful to those around her.

Asking questions in a particular order helped to establish the interlinking of concepts that later became categories. First, I identified many of the emotions following the diagnosis. Next, I asked participants to describe what they meant by stressful, difficult, or scary. Through their descriptions, I was able to identify a pattern to their emotions, including anxiety. Once I had identified a pattern, the responses to my question about the importance of managing or controlling the impact of the diagnosis and stress helped me to understand that participants were concerned both with their own health and with the health of the fetus. The order in which the concepts were identified helped establish the interlinking that supported my working hypotheses: The cause of the participants' stress-related emotions, particularly their anxiety, was their response to a perceived threat to their health and to the health of the fetus; the participants were aware that their health was directly affected by stress; and the participants were aware that the way they responded to the perceived threat affected their ability to manage stress. The feelings that participants reported, and the pattern of those feelings, described the condition of stress. The properties *concern for their own health* and *concern for the health of the fetus* thus linked the category *regaining a sense of control* to the core category, *planning for a healthier birth and beyond*.

Health of Both

To regain a sense of control, participants focused on improving their own and their infants' health. A major factor in the health of both was having stable maternal

blood glucose levels. I observed that participants internalized their health care team's criteria for controlling their blood glucose levels. The phrase "blood sugar is in control or not" is one that health care providers and patient-education sheets often use. However, none of the participants volunteered that the term *control* came from a provider. One participant, Emily, even directly refuted the suggestion that health care providers gave her the term, stating that control was "an issue" from her childhood, when "grades did not come easy" to her but she learned that if she pushed herself, she always "did better."

It was apparent that participants had internalized the blood glucose reference range. Without ever being asked what it was, or if they knew it, all cited the range in their conversations. I thought this was curious. It was as though the reference range was their measure of normalcy. They described it as their "signal" to act when their blood glucose levels did not fall within the range. Sarah said, "[It] really keeps me watching, because I'll know if my blood is outside the regular range. They tell you between 100 and 120 after a meal." Haley commented that having her blood glucose levels out of range was "very difficult" for her "because I like order, and to be in control." Monica admitted to being a "control freak" and described which treatments she felt she had control over when balancing her two high-risk pregnancy diagnoses, preterm labor and gestational diabetes. "It is easier to manage the carbohydrates and blood sugars than it is the bed rest and the not smoking, for me," she said, because she had been smoking a pack and a half a day for 22 years and because no one helped her at home in a way that was acceptable to her:

I might as well do it myself. For example, I don't like how they make a mess of the counter getting me my coffee. I feel like I will just have to

clean that up later. I am working with a counselor to improve in this area. I don't like being this way.

Within the framework of managing the pregnancy, one participant, Sarah, noticed an association between her stress levels and her blood glucose levels, reporting that the days she felt stressed coincided with higher blood glucose levels upon testing. Once she had noticed the association, she admitted, she became more scared and frustrated whenever the blood glucose levels were out of her "comfort range," i.e., the range her health care team had given her. When her levels were out of range, she said, she felt an incentive to try to do "what was best for the baby." She noted that exercise had a positive effect on decreasing both her blood glucose levels and her anxiety.

The finding that exercise decreased blood glucose and anxiety levels was corroborated by all of the participants, even the participants on bed rest. Emily was placed on bed rest for the last 2 weeks of her pregnancy but had enjoyed the benefits of exercise prior to that. Molly and Monica were on medically prescribed bed rest, but Monica was not always faithful. Haley, who had had a previous pregnancy with a diagnosis of preterm labor, was not required to maintain bed rest. Haley and Monica had household responsibilities with other children. But, as Sarah commented, even intermittent exercise produced a noticeable effect on blood glucose levels: "They seem to be in a little more control, and seem to be little bit lower when I actually do my [blood glucose level]." Another participant ordered on bed rest for much of her pregnancy was Shelby, who also had an empiric diagnosis of Munchausen's syndrome. Shelby reported that she chose to walk outside and do exercises inside. After dinner, she said, "I go through some floor exercises, maybe some leg lifts or something, watch TV, have a cup

of tea, go to bed.” Molly, who was following medical advice and maintaining strict bed rest after two prior fetal losses, expressed a wish to use exercise to bring down her blood glucose levels rather than using insulin, if it came to that. And Emily reported,

If my day was stressful or I was stressed, I would definitely have higher numbers. There was no question ... I actually did try to make a note of when I exercised ... just to see if there was any correlation with that as well.

I was able to corroborate a link between stress, exercise, and blood glucose levels based on Emily’s documentation of log sheet data. From there, I validated the link using the log sheet data from Sarah and Haley and the interview data, presented in the previous section, relating to the relationship participants had identified between exercise and blood glucose control.

Providers had told participants that although there could be no guarantees, the chances of having a normal infant were good, provided they took an active role in managing the pregnancy. Women with gestational diabetes are required to play a much more active role in managing their pregnancy than women with many of the other high-risk pregnancy diagnoses. They monitor ketones, blood glucose levels, caloric intake, and caloric expenditure; they may also have to learn how to give themselves insulin. With several other diagnoses, such as preterm labor, incompetent cervix, and preeclampsia, the most common treatment is bed rest; the body is expected to take care of everything else. When I expressed this opinion to Molly and Monica, they agreed. Molly was on bed rest in the hospital; Monica was ordered on bed rest at home, an order she interpreted as the expectation that she would have her feet up as much as possible. Both stated that

gestational diabetes required work on their part. Molly believed that she would do whatever it took for both of her diagnoses to achieve one good outcome after two poor outcomes. Monica, who had had premature deliveries that “turned out fine,” was less inclined to want to maintain bed rest and was also less willing, or able, to stop smoking, which were her treatments for the preterm labor. Emily verbalized somewhat different feelings about adhering to treatment for her baby’s health, saying,

... at least it’s something to work towards, that if I do this, and I work hard, then I might be able to get this, too, but at the same time not set myself up. Even if I work very hard and it doesn’t end up that way, it’s not my fault, at least I was working towards it, you know. That’s my ultimate goal.

Sarah said, “[The goal is] to bring a healthy baby, period. We’ll do what we have to, to get to do that.” Molly also reported a commitment to working hard for the goal of getting her infant born, of reaching “the point of just trying to get where I need to. Get her born, and then ...” And Monica said,

I think it was just everything, stress in my life, my diet, my exercise—pretty much everything at once, considering it was an unexpected pregnancy. But when I found out I was pregnant, I did realize it would be a high-risk pregnancy for a number of reasons. So I am trying to change everything all at once.

Perceived Threat

A property of *perceived threat* was *loss of control*. Several participants described it as “not feeling in control of [their] body.” They were generally dedicated to following medical advice regarding diet, exercise, and medications, yet when the advice did not yield the results they had hoped for they became frustrated with their body’s “not cooperating.” Emily’s description of her frustration is consistent with pilot data:

What is clearly the issue is that I’m used to being in control of my body, and I have no control over it, and obviously I test my blood four times a day. I check for ketones each morning and then I do my fasting blood, and then 2 hours after breakfast, lunch, and dinner, and that was okay. Even administering the insulin, I’m not a huge fan of needles but this isn’t about me, it’s about the baby, and that makes a load of difference. But I’m just— That lack of control, that I can’t make my body do what it should, is frustrating. I am thrilled that what I was doing was clearly making a difference. But when I arbitrarily will eat the exact same thing 2 days in a row, or at least at the same mealtime, and then have 1 day just arbitrarily shoot up, it’s just— that’s when it starts to get frustrating. Some thing(s) I have to throw up my hands [about] ... but what I can do is control what I eat, [and] I can control what my body does in terms of exercise.

Sarah said, “[M]y body frustrates me when I can do the exact same thing for diet, get my walk in, and, after, my blood sugar is down— and then it all of a sudden is up again.”

Need for Social Support

When this “out-of-control” feeling of anxiety surfaced, participants would try to determine what they needed most and how they could get that need met. Again, the contextual conditions of support and information also seemed to be the major areas of need for participants in the category *regaining a sense of control*. In the Conclusions chapter, I discuss how these conditions could both be considered social support, although the participants agreed that they felt they were separate most of the time. The participants often identified social support as a person upon whom they “could lean when the going got tough.” They also identified needs for financial assistance, day-to-day practical help, transportation, food, and housing. Although participants varied in the amount and kind of social support they reported needing, they were in agreement about the times they felt that support was most needed or would be most helpful. There were particular points throughout the process of pregnancy when social support was felt to be crucial: around the time of diagnosis; whenever their blood glucose levels were out of control; and around the time of delivery. The following quote illustrates a behavior provided by a supportive person that represents the kind of support that participants found, or would find, helpful after they were first diagnosed and whenever their blood glucose levels were outside their normal range. Because of having more interview time with Emily in the pilot study, I had more data about the kind of social support she had found to be helpful, but comments from other participants are also displayed, in an effort at full explanation.

My husband has been fabulous, and it’s funny, because usually [when] I’m upset or angry, he’ll get upset or angry, and now he listens to it and says, “You know, it must be frustrating.” And it’s funny, because having

him just kind of ... acknowledge it ... I really found that that's working for me, too. —Emily

My husband is available and is very supportive. He reminds me to have my snacks and to make sure I am eating, and he also supports [me] to make sure I am getting out for some exercise. We have a treadmill at home ... I have someone who will come and will sit with me and talk about different things ... She is just another support person, actually ... If there was some kind of a support group available, too [it would be helpful]. I mean, gestational diabetes would be very interesting. Either people that have had it or people that are going through it would be great. I know that was one thing that I would have really appreciated. Having somebody to talk to ... or to phone ... [N]ow that I've experienced it, if somebody had a question for different snack ideas, I ate a lot of cheese and crackers. Or— you know what I mean. Just something to let them know how I did. What I did to manage it, would be [helpful]. —Sarah

When I asked Shelby, “What has helped you the most to cope with this diagnosis?” she said, “Probably my husband. He's just always reminding me that it's going to be all right. He'll help, and everybody's just there to help.” When I asked Gail, “What was your social support like then?” she replied, “My husband. [The experience was] a lot different [having him there the second time].”

Need for Information

From the time immediately after the gestational diabetes diagnosis, participants reported that information was crucial to helping them regain a sense of control. Information was needed to decrease fear of the unknown. Another property of the subcategory *perceived threat* that was linked to the need for information was *fear of the unknown*. Whereas some participants wanted anticipatory guidance for all future possibilities right away, others just wanted the information they needed to help them deal with their most immediate concerns. However, all of the participants indicated a need and readiness for timely, accurate, and trustworthy information right away. They also wanted to feel that they could come back for more information whenever they needed it. All of the participants wanted to know that there were people they could go to with questions and who would respond with information that was tailored specifically to their situation and that was accurate, recent, reliable, and trustworthy. This need was of paramount importance to all of the participants except Shelby.

I was looking back at my original interview, and, you know, at first it's the fear of the absolute unknown, because I had no idea what to expect with this. Then it was fear: "Omigosh! So many things I need to be aware of!" I don't think that people are aware that testing your blood sugars is one piece and testing your ketone levels and your urine are another piece, because the decreased ketones can lead to indications of brain development abnormalities in the fetus if your ketones are too high. And so it was scary, even though I still had information, but not having the education to know what levels would still be acceptable, and that the

fetus's—the baby's—chances would still be okay ... [getting that information] was what was the most helpful for me. —Emily

Gail characterized information as a must for all women newly diagnosed with gestational diabetes:

I think if they get gestational diabetes, they should be really informed, every time they go, [about] what they should be doing ... [by] a nurse or somebody talking to them on carbohydrates and stuff like that. And I think it's a diet that they had better follow for the rest of their life because they'll probably turn to type 2 [*sic*]. The earlier they start taking care of themselves, the better off they will be.

Gail also recounted how a provider planned education for her after she was diagnosed with type 2 diabetes:

[W]hen I got diagnosed with type 2, my doctor, she's really great, she set me right up with [home health]. They sent a diabetic nurse to my house for, like, 6 weeks, twice a week, to help me understand the carbohydrates and everything I needed to know [about] what you should really do and shouldn't do. It was a really nice nurse, and she really helped [me] a lot to understand how to take care of myself, to figure carbohydrates out, and what you shouldn't do.

The following comments provide an example of how information could change a participant's outlook over time. This is what Monica said about being initially diagnosed and wanting to find information sources:

When I left the doctor's office I immediately wanted information, and it wasn't there. [I felt] pretty much panic and anxiety. Because of the diabetes you think about injections and insulin and all those things, plus the fact that where it is already a high-risk pregnancy [given a history of all preterm births], you worry about the effects on the baby, which up until recently I thought the effects was [sic] the baby just being of large size, and then I read something ... saying that it can actually cause defects and problems with the baby, and I didn't realize that. I thought that the size was— To me, the size was, like, okay, if I have a big baby that's okay, I've just got to keep an eye on my health. But with thoughts of problems like birth defects and stuff like that, it really is scary.

In her third interview, when she was still predelivery, Monica reported a different perspective:

Yes, definitely, it is a fear of the unknown. All of the high-risk diagnoses [preterm labor, incompetent cervix, and gestational diabetes] cause me to have fear, but I feel [it is] the gestational diabetes I have the most control over, and I can make [my son] as healthy as possible.

Information timing was important. Because information was seen as one of the paramount contextual conditions for all three of the categories, it is described in some detail here. The participants reported that information was needed most within 2 weeks of diagnosis, and then in periodic increments, as necessary, throughout the pregnancy. The other contextual condition, social support, was needed in varying degrees throughout the pregnancy. However, the need for social support was most noticeable to the participants

around the time of delivery. That contextual condition is therefore described as part of the core category *planning for a healthier birth and beyond*.

The need to eat was a precipitating factor in making the desire for information feel more time sensitive to participants immediately after diagnosis and whenever their blood glucose levels were out of range. Participants had to find out, and fast, what they were now expected to do to provide the healthiest environment they could for their unborn child. The following quote from Emily is illustrative of how all of the participants, in varying degrees, reported feeling:

There I was, over a week diagnosed, with this frantic, not-wanting-to-eat-anything, you know— logging. They have me log what I eat, but I was logging not only what I ate but the exact calories, fat content, carbohydrates, sugar, everything. And so that was really, you know, that was a tough time.

And Molly said,

Well, I was feeling scared and overwhelmed 'cause it was ... I was told I had the diabetes. Then my appointment wasn't until the following week. I was thinking. "Okay, now what do I do in this week?"

Haley commented that she had seen that particular fear in a friend of hers but said that she herself did not feel as scared because she "got right in" to the diabetes center and learned about the diet.

When information was not immediately available, participants reported, they had a difficult time. When professionals were not available they found other sources of information. Some called friends with similar diagnoses, some bought books, and some

looked on the Internet in the hope of gathering information that was somewhat current, correct, and relevant.

Well, I also had a friend who also had gestational diabetes, so I talked with her to get new ideas and how she went about managing her diabetes. [I] learned ... that I could get diabetes later on in life. I was mainly looking, when I was on the Internet, for menu ideas, things that would be helpful, practical stuff. —Molly

The doctor said to watch my carbohydrates and stop eating sweets, so with that information I started reading books and talking with friends that [*sic*] would have knowledge in that. I have learned there is a lot more to it than I thought when the doctor told me. —Monica

Emily said, “I’d develop that fear of food where I’d be afraid to eat but knew I had to eat. It was an ongoing struggle throughout the remainder of my pregnancy.”

Information-seeking behaviors were generally directed toward professionals. If participants did not have another appointment with their MD or RN right away, they became more anxious. Their first appointment after diagnosis became a priority in their lives, and they felt compelled to see “someone” soon. In fact, the consensus of the participants was that even 2 weeks was too long to wait. Most got an appointment within “a week or so,” but those who did not, or who wanted an appointment sooner, were clearly more anxious than other participants and reported being scared and frustrated. They said that even if their physician did not see them but referred them to a diabetic nurse educator, nurse practitioner, or nutritionist, they considered the first appointment

after diagnosis their chief priority and would make whatever arrangements were necessary to attend their first information session.

The following quote illustrates not only the time-sensitive nature of needing information, i.e., needing it at the time of diagnosis, it also describes where the participant sought information when it was not immediately available to her from health care providers.

I think that I get a little obsessive about things. My doctors and my husband will all tell the same story. But I think that what would have been really helpful is if I could have been given at least immediate access to information, just some sort of guideline to follow, and that would have helped with a really, really long week. For some people, they might just assume that it was no big deal, or “Well, if they don’t call me to get in before, then it can’t be that serious.” But for me it was completely the opposite. It was a nightmare. I felt like I couldn’t eat anything ... So I would say, just immediate access to information, even if it’s just a few pamphlets, even if it’s just a couple of pieces of literature, just something ... I wouldn’t have minded an actual, day-long class. I did have kind of ... support group with two other moms that were also diagnosed with gestational diabetes, which was really helpful. But that didn’t happen until several weeks after I was diagnosed, and I would just say more immediate ... as soon as you find out. That’s when I started to get a little nutty ... And the informational piece, I think that’s the big one ... I did get on the Internet and try to look for some information. It still wasn’t very helpful.

The diet that they put out was not something that would work for me because I can't have fruit juices. —Emily

Monica described how difficult it was to “know” if she was doing well without having something “to go by.” She was eager to be given the education and tools with which to work, with which to do her “job,” because she didn't know enough about it or have the tools to do it well yet.

No, [the blood glucose teaching] hasn't even been offered at this point, but I am hoping that at some point it will be offered to me. But it hasn't been yet, so it is pretty much how much I can learn from talking to other people and reading, is what I am going by.

Participants frequently mentioned the fear of not knowing what would happen to them or to the unborn child. Some reported that they wished they could just see an infant born to a woman with gestational diabetes to know that it is possible to have a “normal” baby despite the diagnosis.

I would have really wanted to see another mother with her child there that had gone through this and gotten to the other side [whom] I could talk to ... Those are two things ... immediate access to education and immediate contact with someone who has had it before ... I would have loved someone to talk me through it and say, “Here are some immediate things that you can do, and you need to just hang in there, and it's going to be a rocky road and it's going to cause you a lot of anxiety, but I'm here to help you with that.” —Emily

Sarah went so far as to describe her goal as being what she defined as not just normal, but healthy.

[I say to myself] “Wow, look how rosy their cheeks are, they look so healthy.” I notice children a lot more now than I did before I was pregnant, just, like, looking at people and looking at my family and friends that have young children. It is kind of, like, that is what I want. I want a well-developed kid that is healthy and well behaved, that kind of stuff.

For some participants who had experienced other high-risk diagnoses, the diagnosis of gestational diabetes was the proverbial devil you don’t know. They at least “knew what to expect with the other diagnosis.” They knew they “could get through it” because they “had before.” There was a certain level of faith that things would “work out” with the other high-risk diagnosis. Here is how Monica, who had three high-risk pregnancy diagnoses (two of which she had had twice before), described her reaction to having multiple high-risk pregnancies competing for her attention:

I may not be following all of the orders for my preterm labor [and incompetent cervix], but I follow more of my doctor’s orders for the gestational diabetes. I have had two babies premature already; I have never had to treat the gestational diabetes before. It is [a] new one for me, and I worry about that causing more problems.

Monica also described how information lessened her anxiety. In an early interview she said, “I thought the diet stuff would be easier, but I didn’t realize that there was so much information that I didn’t know.” Later in her pregnancy, she said,

Oh, [it was] definitely more scary without the knowledge. I think after I talked to you [the researcher] and you clarified the difference between the simple sugars and the carbohydrates and the complex, and the more I have been reading, I think it just started making sense, whereas before, it was all foreign. I didn't have a clue. Now I pretty much have the concept down.

Other Coping Strategies

A number of coping strategies were either identified by participants or observed and interpreted by me. Support and information were mentioned most often and were considered the main contextual conditions necessary for coping throughout the three main categories, *getting diagnosed with gestational diabetes*, *regaining a sense of control*, and *planning for a healthier birth and beyond*. However, the original study question was “What coping strategies do women use to cope with the diagnosis of gestational diabetes?” *Other coping strategies* was identified as a contextual condition because the strategies it comprises all serve the same objective, i.e., to give the perception that they are helping the user to manage a stressor. However, the two main contextual conditions written about most in this study, and referred to most often by the participants, are information and support.

I concluded that the contextual condition *other coping strategies* belonged at the end of the category *regaining a sense of control*. Although these other internal and external coping strategies were used by participants to manage stress at various times throughout their pregnancy, they were not the contextual conditions found to be most

useful or universal. The participants felt that information was needed early to enable them to regain a sense of control, and that social support belonged with the preparation for birthing, which is the focus of *planning for a healthier birth and beyond*, the central concern of participants and thus the core category. *Planning for a healthier birth and beyond* is described after *other coping strategies*.

About two thirds of the *other coping strategies* can be characterized as internal strategies, i.e., actions participants took to change their own cognitive, emotional, or physical status. About one third can be characterized as external strategies, i.e., methods participants used to obtain assistance from other people. Internal and external coping strategies are displayed in Table 2. More extensive descriptions and illustrative quotes are presented in Appendix B.

Using such internal and external coping strategies allowed participants to regain their sense of control. With a sense of control, they felt they could continue to plan for a healthier birth. Some participants had only one or two coping strategies, but most displayed several. Few participants used solely positive coping strategies. Some negative coping strategies, e.g., fingernail biting, were not harmful to the fetus or to loved ones; when more detrimental negative coping strategies were used, the goal of being a better parent would usually push participants to continue striving to do the best they could. For instance, Monica, the participant who chain-smoked, decided that she would not quit but would cut down and switch to a lower tar brand, and that she and her husband and 12-year-old son would all smoke outdoors. By the third interview, she had been able to cut down from a pack and a half per day to half a pack per day. She also sought regular counseling and was in an anger-management group to address her problems and how she

reacted to them. Her new husband was in a men's anger-management group. Both had recognized that their anger was hurtful to the family, and they were learning more positive coping strategies as they planned for the first child that was to be theirs together.

Once again, Shelby served as a negative case. She continued to take Vicodin. She reported going for walks with her dog and doing exercises, despite medical advice to stay on bed rest, saying that it was "worth it" even though the additional movement meant she needed more Vicodin to combat increased pain, and also increased the risk of reinitiating preterm labor.

Table 2

Internal and External Coping Strategies Described by Participants

Internal Strategies	External Strategies
Reading	Seeking support from family and friends
Surfing the Internet	Seeking support from other women with gestational diabetes
Spending time with pets	Seeking support from a nurse
Using humor	Talking with a doctor or other health care team members
Acknowledging their frustration	Seeking congruence among health care providers
Practicing cognitive coping, i.e., learning about gestational diabetes or its treatments, or both	Seeking friendliness in health care providers and office staff
Fingernail biting	Feeling they can talk to their health care providers
Participating in recreational activities	Feeling they will be listened to and valued
Participating in church-related activities	Seeking repetition of information from health care providers to ensure understanding
Maintaining normal activities	Seeking reassurance that the diagnosis or problems with blood glucose levels, or both, are not their fault
Using diversional activities (e.g., fixing up or redecorating the house; doing crafts; doing puzzles; watching television; talking on the telephone)	
Praying	
Attributing a positive meaning to the experience	
Exercising	
Listening to music	

Internal Strategies**External Strategies**

Taking prenatal vitamins

Following medical provider's advice

Eating differently

Using cigarettes

Using alcohol

Using Vicodin or other substances

Journaling

Using relaxation or meditation tapes

Preparing for the hospital environment

Reframing the situation

Being in this research study

Making a game of it

Appraising self-strengths

Viewing the condition as a pregnancy,
not a disease

Focusing on the delivery and the kind
of parent they want to be

Planning for a Healthier Birth and Beyond

Although anxiety is expected in preparation for labor and delivery with a normal pregnancy, study participants had a valid additional concern, induced by the diagnosis of gestational diabetes, for the health and welfare of both mother and infant during the birth process. *Planning for a healthier birth and beyond* was the core category, the main concern the participants were continuously attempting to resolve. In expressing her perception of that concern, Haley accurately described why health care providers want woman diagnosed with gestational diabetes to partner with them for the best birth outcomes for both mother and child.

I know that the babies can be larger ... making delivery possibly more difficult, and that when they have kind of reached that bigger stage ... they're apt to be early because your body's thinking, Okay, you're full term now and as big as you need to get. I know that there is the risk of them having problems after the delivery in terms of either withdrawal or—I'm not sure exactly what it is called, but just highs and lows, of being so used to being on these sugar highs and then not having it. Those are the risks, I guess, that I know of. —Haley

To my surprise, when the participants were asked, “Does this feel more like a pregnancy or a disease to you?” the response was invariably “more like a pregnancy.” Even the participants who were sickly and having multiple problems with their pregnancy were unanimous in saying that it felt more like a pregnancy than a disease. Data from the pilot study had shown the same results. Because of these data, I hypothesized that the

basic social process, the core category linking all of the others, was the category called *commitment to the fetus* in the pilot study. In the current study, after months of interviewing and analysis, the category was renamed *planning for a healthier birth and beyond* to encompass the concern expressed for both mother and unborn child. Sarah described that concern in the following words:

For me I think it is ... the pregnancy. I am hoping— I mean, I know there is always a chance that after I have the baby I will have to continue this, but I think now that I have been though it I will be eating different anyway. I think it really made me take a look at what a serving is. I was heavy before I got pregnant, and I haven't gone back to my prepregnancy weight yet, so in the 9 months that I have been pregnant I haven't gained anything, which has kind of freaked me out. But with the gestational diabetes I am eating differently than I would have before I was pregnant anyway.

Before delivery, I asked participants "What would you say was your ultimate goal?" The responses supported the analysis that *commitment to the fetus* was the participants' main concern. Sarah said, "[trying to do] what was best for the baby." Emily said, "to have a healthy baby and do everything within my power to make this child as healthy as possible." In both the pilot and the current study, the data of all of the participants except Shelby reflected a sense of hope, responsibility, and duty.

After delivery, I asked, "What would you say your goal is now?" Emily answered, "To be the best parent I possibly can. I won't always make the right decisions, but I'll always make the decisions based upon what I think is right for her." Monica was

concerned with, “the effects on the baby.” Sarah said, “We want a good start for the kid.” Gail had concerns, now that her children were older (ages 7 and 15), that they could be at risk for diabetes. “Oh, I tell my son that a lot. He eats a lot of white bread. It’s like, ‘No, you could end up with the same thing I have. You better be watching it.’”

Commitment to the Fetus’s Well-Being

The components of the core category were developed early in the research process as the subcategories *commitment to the fetus’s well-being* and *concern for health of self*. The following quote from Haley is provided for clarification and verification of the evolution of the category. It shows the elements of both *commitment to the fetus’s well-being* and *concern for self*. In addition, it illustrates well the basic social process the participants were continuously trying to resolve, i.e., *planning for a healthier birth and beyond*.

[W]hat kept me going ..., and what [was] always in the back of my mind, was my commitment to my children and to my fetus. But there was also some selfishness in knowing that a bigger baby was going to be harder to deliver for me. If the baby was sickly, or if there was [*sic*] extra things that I was going to have to do ... I think some of that was in the back of my mind, too ... Everything I eat, everything that I’m going to do, is going to affect ... the fetus and might affect me in some ways, either in delivery or after, for care ... That was always in the back of my mind, that it might be harder for me, too, in the end ... My commitment is also how it affects me.

Sarah also talked about commitment:

[W]e wanted to have our family; we made a commitment. Once I made that commitment, then of course I wanted to do whatever was best for the child ... for me, the commitment started when we made the decision. I knew I needed to lose some weight, and I began reading about pregnancy ... Because I kept the blood sugars in good control the last time, I had no problem after birth with my son. He didn't have any sugar crashes, and he was a good size. This is encouragement to do that again. I was so concerned before with what I was doing and what I was eating, and it paid off. What a great reward!

The subcategories *commitment to the fetus's well-being* and *concern for self* were further broken down into two groups in which the participants were constantly fluctuating between normal and high-risk frames of reference. For instance, within the subcategory *commitment to the fetus's well-being*, many of the properties are also commonly observed within normal pregnancies. The properties of the core category, *planning for a healthier birth and beyond*, frequently involve a willingness to seek out normal pregnancy experiences, such as considering whether or not to drink alcohol. However, the diagnosis of gestational diabetes meant that participants had continual reminders that planning for delivery was more complex for them than for women with a normal pregnancy. For example, when considering preparing the home with infant supplies, a normal pregnancy activity, participants had to keep in mind that their infants might be larger than normal, which complicated their decisions on the kinds of clothing to buy, and that the delivery timing might be sooner than the usual 40 weeks.

One participant, Monica, illustrated the difficulty of planning for the infant's arrival given her multiple high-risk diagnoses. Monica was accustomed to having early, small babies, but gestational diabetes was new to her, and she wasn't sure if the diabetes would make this infant larger than her previous infants. A quote used earlier in the chapter illustrates something of this difficulty and for that reason is presented again here:

... where it is already a high-risk pregnancy [given a history of all preterm births], you worry about the effects on the baby, which up until recently I thought the effects was [*sic*] the baby just being of large size ... I thought that the size was— To me, the size was, like, okay, if I have a big baby that's okay, I've just got to keep an eye on my health.

Molly was concerned with “getting this baby delivered,” and Haley is quoted earlier as saying “It was stressful in that I didn't know what the outcome was going to be for my baby. Was I going to have a really large baby? Was it going to be really early?”

For planning birth experiences, participants needed to consider what kinds of experiences might still be available to them given their diagnosis of gestational diabetes. Early in our interviews, Sarah discussed a birth-plan wish that included a water birth, which was taken away because of the gestational diabetes:

Everything else was going so smoothly. The thing that bothered me the most was that I couldn't have a water birth, which is what I was really looking forward to ... [T]hey really keep the water births to people who have really no ... complications at all, which really bummed me out.

Other participants did not mention a water birth specifically, but they had unmet wishes for a labor with more mobility than electronic fetal monitoring would allow with any

high-risk diagnosis. (Sarah later reported being “thrilled” when her midwife allowed a water birth after all.)

Meals and meal planning were common sources of frustration. Within the subcategory *commitment to the fetus’s well-being*, some of the properties “felt very different” from the properties of commitment to the fetus’s well-being in a normal pregnancy. The choices available to participants for eating and exercising were complex. The cost of food was often increased by the diagnosis, either because of a need to prepare separate meals for the pregnant woman and the rest of the family, or because healthful foods are generally more expensive. Three of the pilot study participants indicated that they were encouraged to buy nutrient-dense fresh ingredients instead of carbohydrate- and sodium-dense prepared foods, which were easier to fix and often less expensive. The following quote from Emily describes how store-bought prepared meals are all wrong for a woman diagnosed with gestational diabetes, and how frustrating that is.

Last night was a perfect example. I got home from work ... Then came dinner, and we really didn’t have anything that I wanted and had to run a few errands. Went to the grocery store and saw [that] some of the Healthy Choice or Lean Cuisine or the Weight Watchers dinners had about 48 to 50 grams of carbs, and it’s just amazing how frustrated that can make me almost immediately.

Monica and Gail talked about how it was harder financially to follow a higher protein, lower carbohydrate, fresh-vegetable diet. These foods cost more than cheap carbohydrate foods like pasta dishes. As Monica observed, “The cooking and the shopping and all that stuff, all those things are affected.” Gail said,

I think this is a disease that if you don't have the income to do it, it's hard to do it. I can't afford the food that I know we should have, [like] wheat bread, you know, the whole grain stuff. Spaghetti is one of the cheapest things you can get, but it's one of the worst things I can eat. See what I mean? (Gail)

Sarah echoed the frustration involved in trying to find allowable things to eat in fast-food places such as Burger King. She said that for a snack she would sometimes choose the chicken nuggets because she thought they were a "protein source without as many carbohydrates" as a sandwich with a bun. Monica identified restaurant menus as also being problematic. "My friend took me out to Chinese the other day ... I hadn't really looked into the Chinese food, because it is a rare thing, so I wasn't sure whether it was good or bad."

Meals made from fresh ingredients are usually not only more expensive, they are also more difficult and time-consuming to fix than meals made from prepared foods.

Monica stated that with her budget and being on ordered bed rest,

this sample meal from my nutritionist is a joke. "Haddock with lemon, baked potato, mixed vegetables, tossed green salad, fresh fruit cup, hot roll with butter, and skim milk." I can't stand at the sink for the fresh fruit cup, and I'm lucky if I can get fish sticks on [my] budget.

The timing and amount of food intake were additional decision points that made the properties of this subcategory generally different from those of a normal pregnancy.

For example, since the timing of food intake was so strictly regulated, Sarah, Molly, and

Emily said that sometimes they had to choose “to eat alone for the baby’s sake rather than wait” to eat with their partner.

Additional properties for the subcategory *commitment to the fetus’s well-being* included whether or not participants did self-monitoring of blood glucose levels, kept the numerous appointments with health care providers, checked ketone levels, and adhered to various additional medical interventions. These properties reflect the decision processes for adhering to the complex demands of a pregnancy complicated by gestational diabetes, demands that are often very different from the demands of normal pregnancies and other high-risk diagnoses. However, all of the participants except Shelby described the commitment to the fetus as making it all worth it. (See also the quotes stressing the participants’ willingness to sacrifice for their child in the Valuing Treatments section of the Conclusions chapter.)

I test my blood four times a day. I check for ketones each morning and then I do my fasting blood, and then 2 hours after breakfast, lunch and dinner. I administer ... the insulin ... This isn’t about me, it’s about the baby, and that makes a load of difference. —Emily

I think [keeping the log books] is a great way to show a kid that they were wanted. And they are, you know. I don’t want to say sacrifices— that sounds so “poor me,” like a martyr—it’s, I want a healthy baby, the whole point of this is to have a healthy baby. We want to give the kid the best, best from the beginning, and if I can do it ... —Sarah

Attachment and bonding behaviors is another property of the category *planning for a healthier birth and beyond*. Participants were observed calling their infants by their

chosen names, referring to their genders and characteristics or attributes that they thought the infant already possessed, such as wake-sleep patterns, how much the infant kicked, and what sounds scared or soothed the infant. Participants were also observed rubbing and talking directly to their pregnant abdomens. After delivery, some participants appeared to miss the feeling of closeness they had enjoyed with their unborn infant. Two pilot participants mentioned this, but in this study only 1 participant, Emily, described the “surprising loss” after delivery; Emily was also the only participant who had gone back to work and was away from her new infant for long periods of time.

I’m a little sad that I’m not pregnant right now. I don’t have the baby inside me. I can’t feel her kick. She’s actually outside of me and that was something I wasn’t prepared for. I thought that it would be ... I mean, it is wonderful, because I can see her and I can hold her, but there is ... it’s just something that I wasn’t prepared for.

Valuing treatments was another property of this category. With other high-risk diagnoses, the mother chooses to allow (or not to allow) the medical establishment to do something “to” her or the baby. With diagnoses such as pyelonephritis, hyperemesis, and even preterm labor, the mother often checks herself into the hospital and medicine is then delivered to her, perhaps intravenously. Most women diagnosed with gestational diabetes are no longer admitted to the hospital. They are managed on an outpatient basis unless another complication arises. With gestational diabetes, a high degree of participation by the mother is integral to achieving high-quality outcomes at delivery and beyond. All of the participants except Shelby echoed this sentiment of Emily’s “I saw how willing I was

to do whatever I needed to make sure this baby was safe. And I think that was my first glimmer into what being a parent was all about.”

I posed a question about communication differences: “If men got gestational diabetes, would it be treated differently?” Molly said yes and Molly’s husband said yes. Haley expanded in her answer on her belief in what is perhaps a stereotype about a woman’s willingness to make sacrifices.

In thinking about if they could just be pregnant in general ... They would probably be wanting sympathy, or then again it is easy for me to stereotype, too. But I know that a lot of men, when they get sick they just want to be babied, and, you know, the world kind of stops and they stay in bed ... and with women we just kind of keep going and take it in stride. So I think maybe if they could get it then they would actually be able to see ... some sacrifices that you make, even if they are wonderful sacrifices because it has to do with a baby.

The kind, amount, and timing of the food she eats; the amount and timing of her rest and activity periods; and the kind, amount, and timing of the medicine she takes are all based on the mother’s commitment to the costly testing of her blood glucose levels and close adherence to rigid timing requirements.

I did have a couple of times when [the blood glucose level] would go above 120, but I always knew there was a reason. Either I had really not watched what I ate, which hardly ever happened, but if I was in a party situation or where I wasn’t necessarily keeping track as well as I could have [it might]. Or I tested a little bit too soon, knowing that I wasn’t

going to get to test at a specific point. So I always could rationalize, I always knew why it happened ... I'm definitely a person that needs to be in control of situations. [Not knowing what had caused the high reading] just would have been terrible. It would cause so much stress if I couldn't have pinpointed what had just caused it. You know, if I thought I was eating what I was supposed to be eating, and it just seemed out of control, yeah that would have been ... frustrating. —Haley

All of the participants described the commitment to the fetus as making it all worth it except Shelby, who said,

My parents are kind of pitching in for my testing supplies. It's been really good because the prices for the test strips are just ... I mean, \$75.00, or whatever it is, is unrealistic. People can't afford that ... Nobody can afford it, and people don't test.

Concern for Health of Self

The subcategory *concern for health of self* was explored late in the process of data collection and analysis. It may be that this subcategory was developed later than *concern for the fetus's well-being* because of bias on the part of society, the participants, and researcher. Socially, it is more acceptable for mothers to provide “the best” for their unborn baby than it is to provide “the best” for themselves.

The subcategory *concern for health of self* was broken down into *concern for mental health of self* and *concern for physical health of self*. Some of the participants' decisions to continue what would normally be considered unhealthful practices were

explained on the basis of their own mental health. For example, Monica, the participant who smoked cigarettes, worked toward *planning for a healthier birth and beyond* by changing to lower tar brands and decreasing the number of cigarettes she smoked in a day, but she did not strive to plan for the *healthiest* birth, saying that she made the decision to continue smoking after weighing her own “mental health” needs against what was best for the baby. As another example, Shelby said, “I kind of know what to eat and what not to eat, but at this point I have just been eating anything I want. Just portion control. The other day I had a candy bar, and it was good.” She spoke proudly and defiantly, reminding me of an adolescent choosing a behavior that an authority figure had told her was not good for her.

With the exception of Shelby, the participants discussed the subcategory *health of self* less often than the subcategory *commitment to the fetus*. The idea of what it means to be a good mother was generally expressed as a desire to put their child’s needs before their own. They were willing to make sacrifices so that the infant would be healthier than if they did not try at all. They saw the experience of gestational diabetes as a test, of sorts, and were prepared to prove that they would do whatever it took to protect their unborn child. They were being asked to give of themselves unconditionally even before they saw their newborn. Molly, Sarah, and Emily talked about keeping the log sheets that documented their blood glucose tests as a sort of journal to show their children what they had gone through, so they could prove how much they had wanted them.

Because the pregnancy was something they felt it was their mission to complete, or their “job right now,” participants sometimes became distraught when their body did not cooperate and do what they wished. Participants felt betrayed by their body; at times,

some admitted, they felt inadequate to the task of being a good mother, given that their body was not functioning correctly “at this stage.” Molly, Monica, Sarah, Haley, and 3 pilot participants all described this angst.

And I actually said ... to my husband at some point in the pregnancy, “Why wouldn’t they decide to have me have a C-section early, since my body doesn’t seem to be doing what it’s supposed to? It doesn’t seem as if it’s the safest place for her right now.” And that was also really tough, too, to acknowledge that as a parent I might not— my body might not be the best place to carry my own child ... That was a really sad acknowledgement. —Emily

Except for Shelby, all of the participants talked about the goal of wanting a healthy infant, or of wanting to feel that they had at least done their part to achieve a “healthier” infant. When participants were asked how this diagnosis affected their life in general, many said that they saw it as “part of the job.” The inconveniences of testing, eating differently, and exercising strategically were factored in to their new job of being a mother to this infant they had not met. Many participants saw the pregnancy as their mission, at the present time, with a goal of delivering as healthy an infant as possible regardless of personal sacrifice or reduced family income from their lost time at work. Some even thought that because of this experience they would be a better parent.

And, I think that this [diabetes experience] is definitely going to help me be a better parent, and I think that this whole experience is going to do nothing but help contribute to me being a better mom and being more understanding, really paying attention to what’s going on, and I think

that's one of the biggest benefits. And it actually made me even more excited to meet this baby than I was before. I thought I was excited before, and now I can hardly wait to put her in my arms and wrap myself around her and see that she's okay, and that this work is going to pay off. —Emily

Haley reported that her parenting improved as a result of having gestational diabetes because of “being able to go and actually see a nutritionist, which I probably never would have done, and actually now kind of looking at my kids' diets.”

Concern for parenting ability is another property of the core category *planning for a healthier birth and beyond*. Participants thought about their parenting role after delivery. Even while they were focusing on sundry immediate tasks, such as managing to get through the day's blood glucose levels and their responses to them, they always had an eye on the upcoming birth and the ultimate goal of mothering. Participants recognized that caring for their own health was an important aspect of the all-important parenting role they were planning for. As Sarah said, “Yeah, the baby will come when it comes, but once we get past that, then we are on our way, and that's a whole other story.”

Participants planned to use healthier eating choices and to increase their activity even after delivery to positively affect their family's health. The property that closely follows *concern for parenting* is one in which the mother is focused on positively affecting the health of both herself and her newborn beyond birth. One property is *planning to use the healthier eating choices and increased activity to positively affect their whole family's health even after delivery*. The other closely intermingled property is *seeing the diagnosis as an opportunity to change behaviors now to ward off diabetes later in life*. Sarah said,

I think it is definitely a fair warning for me, to watch what I do. I've always had a weight problem growing up, so it's one of those deals where I know it's all related, what you're eating, what you're not eating, whether you're exercising or you're not ... It's been a learning experience.

Several of the participants saw the changes in their health as so positive that they felt it was important to maintain the healthy behaviors after delivery for the sake of their whole family's health. They discussed the role of becoming the "health officer" for their family, ensuring that everyone had nutrient-dense food choices and that the children could watch their parents live as active a life as possible to maintain their weight.

Walking ... and a stepper bench ... a couple times a week for maybe 30 minutes. Then I almost always have my kids in tow. Every day for 30 minutes we walk down to the park and back ... We've never really watched TV, we're pretty much outside. [My husband] has a gym membership, so he's at the gym a few times a week. Then he comes home and is out with the kids. So, yeah, we have a pretty active lifestyle. [I'm] the person who cooks and has the information about diet. I know genetically this is certainly something that could affect my children. I want them to learn how to eat correctly at a very early age. —Haley

In following up Sarah's comment about preventing type 2 diabetes, which her father has, I commented, "It was a learning experience, in that you have learned that you can make not only a healthy start for your baby, but a healthy start for you and your family." And Sarah responded,

True ... I have definitely seen that with my husband. He doesn't want those extra chips with his sandwich. He will see how much [is] in soup versus a bag of chips, or whatever ... He is responding to what I am doing.

The participants wanted to prevent obesity in their children. Some looked far enough into the future to hope that through modeling healthy behaviors they might be able to prevent gestational diabetes later in their own daughters. Haley, Sarah, and Monica all discussed achieving or maintaining an active lifestyle after delivery and teaching or maintaining healthier family eating habits; some of their quotes are displayed in previous sections. The following quote from Emily is used here because it specifically talked about obesity in the child's life as well as what this mother wanted to do to help her daughter both before and after her birth.

I would say my underlying concern is the baby ... Is she going to be okay? ... Is obesity going to be a factor for her in life? ... I wouldn't have a problem helping her deal with the diabetes, but ... whatever I can do to help her in advance is what I want to do. And that's why insulin, for me, was a no-brainer. It's not crossing the placenta, and it's helping to keep *her* sugars in check, too.

Another property of the core category *planning for a healthier birth and beyond*, experienced along the dimensional range of lesser to greater degree, is *appreciation of women's bodies*. Some participants said that another positive aspect of the experience of being diagnosed with gestational diabetes was a newfound appreciation for women's bodies and "what they are capable of."

When the placenta came out my doctor looked at it and said, “[W]hile it was ... not allowing your body to process sugars well, look at what it did to protect the baby.” The placenta was three times larger [than normal]. It was enormous, absolutely enormous. And so, seeing that, it was almost like tangible evidence, you know. I saw Emily, and that was great, but ... seeing what my body was capable of ... what it did to protect this little tiny baby from everything that, you know, I was having a problem with, just amazed me. —Emily

Other participants talked about appreciation of women’s bodies related to the “miracle” of pregnancy and birth, but not related to the diagnosis.

I think it is *so* cool to hear about the placenta and how it works to protect the baby during this diagnosis. But I think about pregnancy and birth as awesome and inspiring, not the disease. I am mostly thinking it is fabulous it went away. —Sarah

Haley commented, “I definitely have an amazement for the miracle of pregnancy and birth, not for the gestational diabetes.”

Support and Information

Appreciating what their bodies were capable of did not diminish the importance participants placed on having someone with them during the birth experience, and this need relates to the third and final contextual condition, social support. During the birth process, especially, social support was seen as crucial. The important role played by the

support person during labor and delivery, and immediately after delivery, was described by Emily in the following way, and was verified by all of the participants.

I just am so thankful I had [my husband] to be my rock. People say, “Well, if he hadn’t been there you could have done it,” and while I don’t doubt that, I’m just glad I never had to know that because I really— I don’t know if I believe that. He was there for me and just knew what I needed and has been— I could never tell him how much I’d appreciated that and the support that he’s been able to give me. And I think that, you know, my parents are already sensing a change in our relationship and my relationship with my parents. Because this definitely was a bonding experience ... his role and my role are so clear, and they’re so cut and dried in what we need and how we’re functioning, and I think they’re feeling a little bit left out. Because they’re watching me, they’re finally seeing me as a woman with a family, not just their daughter who’s married, and I think that it’s a little difficult for them ... to see that I really reached that next level, and I’m coming into it nicely.

Portions of previously displayed quotes are also relevant here. In response to the question about what had helped her the most to cope with gestational diabetes, Shelby said, “probably my husband. He’s just always reminding me that it’s going to be all right. He’ll help, and everybody’s just there to help.” Sarah said, “My husband is available and is very supportive”.

The participants felt that it was not necessary to describe the contextual condition social support in as much detail as the other contextual conditions because it is so different for each person. As Emily commented,

Obviously [social support] varies from person to person. I think that it depends on all of those other factors. It depends on what level of education around GDM you've had, it depends on the support system you have in place, and it also depends on what your body's doing with those numbers every time you're testing. There are some days I could be so totally optimistic—"I'm feeling great, my numbers are great!"—and then arbitrarily my numbers would just be up again and I would be really sad at that point, and it was really frustrating.

Nonetheless, all of the participants, and I, believe that social support is central to the theory. Data from the study showed that social support had an impact on participants' psychological outcomes. Molly's use of the journal, her church, friends, family, phone, puzzle books, and a friend who had gestational diabetes, all helped her to feel supported through a difficult time. Sarah had creative ways of getting social support, calling the county's Healthy Family contact so she could receive a regular visitor. Emily, Molly, Monica, Haley, and Sarah were interested in a support group, newsletter, and phone buddy, and Gail wished that she had had that kind of support available.

All of the participants depended on their partners for their primary support. Gail had not had the support of a husband during her first pregnancy and reported that the experience of her second pregnancy was "totally different." When questioned, she said that the key to the difference was "my husband."

The participants reported that identifying social support that suited their particular circumstances was absolutely necessary, and that it was especially critical immediately after *getting diagnosed with gestational diabetes* and whenever they needed help *regaining a sense of control*, especially when they were *planning for a healthier birth and beyond*. Armstrong (1993) concluded that women with gestational diabetes, a vulnerable population, require assistance in finding social support for financial and tangible assistance so that they can be more focused on the information they need to improve their outcomes. The participants in my study had varying degrees of social support but felt that, overall, they were generally well provided for.

The participants also described their need for support and information from health care providers and identified a number of specific ways in which the health care team could help them. The front-office staff should be friendly, call patients by name, and tell patients that they will help them figure out their insurances. Participants had suggestions for the staff in the labor and delivery areas, the maternity unit, and the paraprofessional network they became associated with during their pregnancy. The common suggestion was simply to “communicate with one another and with the woman’s health care provider so that they are all on the same page.” Participants also outlined their interest in a support group, a phone buddy to call who had been diagnosed with gestational diabetes before, and a newsletter. They even brainstormed about who should run the support group, where it should be offered, what times and locations would work best, who should mail out the newsletter, and who should write for it. The supporting quotes for other coping strategies, and quotes relating to the desire for more social support, are presented in Appendix B.

Participant data on the need for support and information are also described in the in the Implications for Nursing Practice section of the Conclusions chapter.

Because the need for support was not separable from the need for information when participants described what they wished for from health care providers, there were some interesting findings. The participants identified areas that clearly require improvement. The property within the core category *planning for a healthier birth and beyond* that came from this participant-driven need was *seeking consensus from health care providers*. From the time of their diagnosis through the time of their delivery, participants wanted their health care team to provide information not only about what the diagnosis was and how it would be treated, but also how it would affect them and their unborn child. They wanted that information to be consistent. In the course of treatment for gestational diabetes, participants often saw different kinds of providers, and they would notice inconsistencies in the information they were given. The following quote from a participant who received consistent messages contrasts sharply with the quote in the next section from a participant who received inconsistent messages.

[The members of the health care team need to] reinforce each other, definitely ... I've asked the same questions of three different people at three different times, none of them sitting in the room together, and received the same answer, and I cannot even tell you how much that's meant to me ... I have so many doctors' appointments in a week, you know, I usually have about three appointments in a week, one with the nurse, one with the nutritionist, and one with my OB-GYN. —Emily

When participants received conflicting information, especially about diet, they picked up on the inconsistencies right away. Their first reaction was usually frustration. Participants were often in a problem-focused mode of coping and were just trying to learn how they were supposed to cope with this new diagnosis. They wanted *the* answers laid out so they could follow them. Sorting out the best answers was often too much to ask of them. Who were they to believe? And why didn't the providers agree on what was best? Inconsistencies led participants to believe that their health care team didn't have all of the answers, and thus it became *their* job to sift through the information to determine what fit with their situation, regardless of what was considered "best." Emily's quote illustrates the positive effects of agreement among providers. The following quote from Monica, in contrast, illustrates some of the negative effects of inconsistent information and lack of coordinated care:

I am supposed to be on strict bed rest, yet I am [also] supposed to drive to the doctor's office at least twice a week, and that is an hour each way. Usually it is for testing at one appointment and to see the physician at another. If I see the nutritionist or go for a foolish WIC check, that is another trip out of bed. WIC asks for the information from my doctor's office anyway. That office can send WIC my weight and my blood counts. Why should I get up again? Besides, WIC doesn't have allowances for gestational diabetes. I [can] get the fruit juice and cereal with all of its carbohydrates, or I can go without. So I bring it home for the kids. I don't think all of these different people realize sometimes what they are asking. After I am up 3 to 4 hours two to three times a week by orders for

appointments, it gets a little hard to listen to them when they say I only should be getting up to go to the bathroom or to grab something in the refrigerator “on the way by.” Speaking of eating, I was desperate to see the nutritionist right after I was diagnosed. I couldn’t find, anywhere, what I was supposed to be doing. Well, the appointment wasn’t for more than a week! I thought, okay, it’s because they need that time to get stuff ready about me, get my records from the doctor’s office or whatever. Well, I get there and they don’t have anything. They give me a diet that isn’t made for gestational diabetics, especially one on a budget and with preterm labor! It has suggestions like tuna, when I know pregnant women can’t have mercury. It has baked haddock, and I can hardly afford fish sticks.

Another thing it says is a fresh fruit cup. Who will stand at the sink and cut up enough fruit to make that?

I verified the data regarding what WIC has for allowances for medical conditions, speaking with the program manager of the state’s program in January and April of 2003. Shelby verified the data as correct for the bordering state as well. The allowances are determined by a U.S. Department of Agriculture (USDA) rule. The USDA WIC program has only seven food packages for which a family can qualify. There is no flexibility for allergies, cultural factors, or medical conditions. Gail, Monica, and Shelby all used WIC, and all stated that there was no special information available about gestational diabetes.

One of the effects of having to sort out their own medical advice was the participants’ sense of disappointment in, betrayal by, and additional frustration with their providers. In such cases, the participants felt that investigating the information they were

given became an additional job they had to take on because the health care team was either too busy, did not know enough, or did not care enough to act in the patient's best interest.

Investigating was performed in various ways. Participants asked whomever they trusted, or perhaps wanted to trust. They would compare one health care provider's answers with another's, checking for consistencies and inconsistencies. Trusted informants could be friends, neighbors, family members, or other health care providers the participants knew, but for whom gestational diabetes was not an area of expertise.

I started asking anyone I knew if they knew what the diet was supposed to be. I knew I needed to eat something and I didn't have a meter to check my blood sugars. I was scared I was going to cause a problem with the baby. I asked people who didn't work with diabetics, but I knew they probably had learned about it, like my friend Betsy. I thought, well, she's a nurse, maybe she knows the diet. She said no, but that you [the researcher] probably do. —Monica

This checking activity helped to build support systems, albeit sometimes dysfunctional ones. For example, some participants would disparage answers they received from one source in order to prove another's point of view. Monica remarked, "Well, I thought [Provider's Name] was all wrong ... I guess we were right all along ...". Some participants consulted the Internet; others found books. The obtaining of information was crucial in this category, not just as a coping mechanism to have the answers to a problem, but for the support system created in the search for the answers. The value of a support system may lie with the networking skills acquired from the

activity, or it may lie with the sense of teamwork created with a solicited individual or group. As Monica commented, “Even though Betsy didn’t know about the diet, I felt like she was on my side, trying to learn where to go for more information.”

When asked what they think health care providers should do—or are, in some cases, already doing but could do better—participants had definite advice: Treat patients like individuals. Remind them that the diagnosis is not their fault—they were genetically predisposed. Have friendly office staff. Have information available right away. Make sure patients feel that they can call or talk to someone right away. Be prepared to tell patients something for the 100th time, because what might be routine for health care providers is all new to newly diagnosed patients. Make sure patients understand that minor changes in their regimen are not bad signs, let them know when they are just being “tweaked”. Communicate better with other health care providers. Finally, listen to their concerns and do not “smooth them over” as though they were nothing to worry about.

Finally, I asked participants what they felt they gained from the experience of having a pregnancy with a diagnosis of gestational diabetes. Most indicated that they had learned more about themselves. They had found a sense of strength, perhaps improved their relationship with their partner, and learned where to go for support and information resources.

I had to stop the junk I was putting into my body ... I consider myself to be a role model to my children. Taking care of my body is taking care of my children better. I am surprised with ... how the smell of cigarettes turns my stomach; I have an aversion to smoking, and it makes me aware. I am trying to be so healthy. I think, “Keep your toxins to yourself.” I used

to be a social smoker; I would have a cigarette when I had alcohol. Now I don't do either, and I am constantly reminding my girlfriends who want to become pregnant to give that stuff up early! —Sarah

[I learned] that when I need to, I will definitely step up to the plate and do what needs to be done, and I did not know that I was that strong. I didn't actually ever think of myself as a strong person, personally. When it comes to ... my professional life, I never had a doubt. I can be very strong when I need to be to get the job done. —Emily

Summary

The main concern participants expressed was achieving a healthier birth and fulfilling their ultimate goal of mothering. They reported that from the date they were diagnosed with gestational diabetes they were frequently stressed and made anxious by perceived threats that alternated between fear of the unknown and fear of losing control. Participants used a variety of coping strategies to combat the fears and regain a sense of control. The most important coping strategies, especially initially, involved identifying support systems and obtaining information about the diagnosis and treatment. Later coping strategies included adaptations required for maintaining a focus on planning for a healthier birth and beyond. These adaptations included commitment to the fetus's well-being, which participants showed by valuing treatments, attachment and bonding

behaviors, concern about their parenting abilities, and concern for their own and their family's health.

This grounded theory study was undertaken with the intention of providing nurses with a richer understanding of how women experience a diagnosis of gestational diabetes. Such an understanding can lead to a better mutual planning and goal-setting process that gives the patient with gestational diabetes an increased sense of participation and control. Through supporting, teaching, and reinforcing, nurses play a critical role in facilitating adherence to a treatment regimen, and I believe that with a broader and deeper understanding of how women cope with the diagnosis, nurse clinicians will eventually develop more proactive and effective interventions for women diagnosed with gestational diabetes.

Chapter 5

CONCLUSIONS

This chapter describes the integration of categories leading to the development of the midrange nursing theory *planning for a healthier birth and beyond*, a framework for the range of strategies women use to manage gestational diabetes. Tentative theoretical propositions are advanced about relationships between ideas expressed by study participants and related psychological and sociological theories. The study's potential implications for nursing practice, research, and education are discussed, and the study's limitations are acknowledged.

In this grounded theory study, the word *theory*, as in "midrange nursing theory," is used to mean an integrated framework developed from analysis of observational, chart, and interview data, with explication from the literature, where available, for conceptual development. Because most of the participants were actively involved in the process of managing a pregnancy complicated by gestational diabetes, categories and theory are labeled in process terms. The word *cope* used in the original research question was perceived by participants in the pilot study to have negative connotations and was therefore replaced during theory development by *manage*, the word used by participants. Further, it is posited that *manage* is a more empowering term than *cope* or *coping* strategies for providers, researchers, and educators to begin using when talking with people.

Category Integration and Theory Development

The theory *planning for a healthier birth and beyond* is derived from the three supporting categories displayed in Figure 1: *getting diagnosed with gestational diabetes*, *regaining a sense of control*, and the core category, *planning for a healthier birth and beyond*. The categories are derived from the three time periods during which participants' concerns were the most pronounced: (a) when they were first diagnosed, (b) whenever their blood glucose levels were outside the reference range their health care providers had given them, and (c) just before delivery. These were predictable times of angst. However, they were not necessarily linear. Although some participants seemed to move from one phase to the next in chronological order, others would revisit a previous time of angst with some frequency. I interviewed the same participants at different times in their pregnancy in order to record the basic social process of managing a pregnancy complicated by gestational diabetes. Over the course of the interviews one category might be more pronounced than another, but it was common to see participants who were still trying to cope with *getting diagnosed with gestational diabetes* and struggling with *regaining a sense of control* while they were simultaneously *planning for a healthier birth and beyond* (see Figure 1).

When the basic social process of managing a pregnancy complicated by gestational diabetes is looked at horizontally—from *getting diagnosed with gestational diabetes* to *regaining a sense of control* to *planning for a healthier birth and beyond*—the categories describe the process. Glaser (1998) refers to this horizontal view as the *why* (1998): Why do participants move from one stage or phase to another? And why do the

participants feel the need to move along this continuum? The configuration helps the researcher to analyze the timeline and to see how a participant's world is changed at different points. When the category data are looked at vertically for their individual properties, the structure is described. Glaser refers to this vertical perspective as the *how*: How do the participants describe a concept? How do the categories interlink? How do the properties help to define the categories? The vertical perspective would look more like a list.

Properties structure each category. Identifying properties fleshes out and defines the category as clearly as possible. The properties of each category describe attributes, which might be visualized as separate "spokes" of each category "wheel" in the theoretical model presented as Figure 1. The properties are further defined by dimensions, which express the range of possible variation. For example, for the dimension *low expression to high expression*, one end of the spoke would be *low* and the other end, on the opposite side of the wheel, would be *high*.

Any snapshot in time would look unique. Each participant's social context was unique, so each wheel of the theoretical model, which represents a dynamic process, "spins" differently for each participant. Because the categories are derived from data collected at varying points in the process, and because some of the strategies used to manage one time of angst might also help a participant to manage another, the wheels of each category are positioned in Figure 1 so that they overlap slightly. This positioning also reflects Glaser's (1998) admission that a social process is not really linear, even though he describes the *why* horizontally and the *how* vertically.

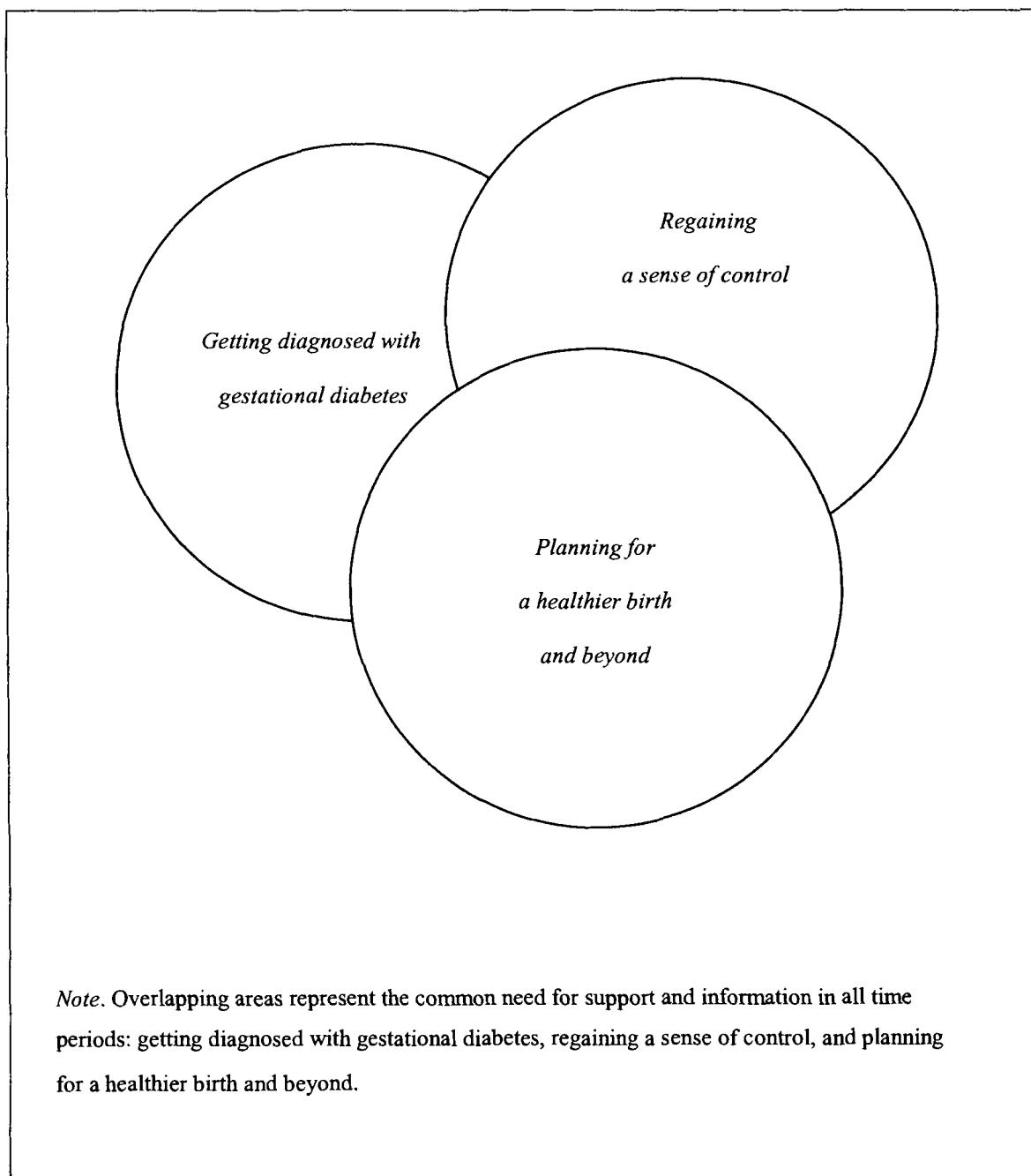


Figure 1. Theoretical model of *planning for a healthier birth and beyond*, an emergent midrange nursing theory that interprets the strategies women use to manage gestational diabetes.

If the theoretical model were more detailed, the wheels in Figure 1 would have spokes labeled with the properties they represent; the ends of the spokes would be labeled with the ends of the dimensional ranges. However, Glaser (1998) preferred using words to explain categories and theory, and only agreed for the sake of conceptual clarity to the use of tables to depict categories and models to illustrate theory. Therefore, I have placed the table of categories developed during the course of data collection and analysis in Appendix A. In this chapter, examples of the properties and dimensions of the category *getting diagnosed with gestational diabetes* are displayed in Table 3 as an example that may help make my analysis clearer to the reader.

Through the analysis, I sought to develop categories from concepts that emerged from the data. From the categories, I sought to uncover a theory abstracted from the immediate context that would still explain the data. Glaser (1998) maintained that the proper outcome of grounded theory research is not to produce findings, but to generate a theory that explains data, or to discover a theory that is a combination of hypotheses, linking ideas gleaned from submerging oneself in the data. Moreover, grounded theory is not intended simply to interpret what is common to all data, but to interpret the variations and patterns in the data. A grounded theory researcher cannot just describe what participants said or did but must work with them to develop a shared interpretation what the experience meant to them, analyzing patterns and variations through comparing concept to concept. Comparing concept to person would reduce the analysis to a level of simple description, or incident tripping (Glaser, 1998).

Table 3

*Example of Properties and Dimensions of the Category**Getting Diagnosed With Gestational Diabetes*

Property (Attribute)	Dimension (Range of Variation Possible)
Perceived threat:	High anxiety—Low anxiety
To self	More—Less
To fetus	More—Less
Timing of diagnosis	Sudden—Expected
Delivery of diagnosis	Sensitive—Insensitive
Past experience with coping	Several tools—None known
Self-perception as capable of mastery	Challenge or growth opportunity—Victim
Regaining a sense of control	Feeling overwhelmed, in emotional crisis—Learning to manage anxiety for sense of control
Accepting “sick” role	Easily—Not easily
Perception of available resources	Many—Few
Social support and effect:	
Health care team:	No effect—Much effect
Primary care physician	No effect—Much effect
OB physician	No effect—Much effect
Covering OB physician at delivery	No effect—Much effect
Certified nurse midwife	No effect—Much effect
Nurse practitioner	No effect—Much effect
Physician’s assistant	No effect—Much effect
Registered nurse	No effect—Much effect

Once a particular category has been established and its properties and dimensions have been fleshed out, displaying incidents that repeatedly exemplify the category is not useful. Therefore, this section presents patterns and variations in categories and describes how the theory *planning for a healthier birth and beyond* emerged. Often, the theory label is taken from the core category because it best describes and explains the data. In grounded theory, the categories are all interlinked with the theory. The goal, according to Glaser (1998), is to find the smallest number of categories that will explain the widest variation in the data. The categories are based on areas of participant concern and are linked to one another. The linking describes the participants' overall "main problem" and how the participants interpret the "solving" of that problem.

In the first part of this section, the findings in each category and how they build to the theory are presented. Through analyzing the data I developed a profile, based on the properties of each category, of a woman diagnosed under optimum conditions: an ideal case. I also developed a profile of a woman diagnosed under less than optimum conditions: a negative case. At the end of this section, when the theory *planning for a healthier birth and beyond* is described, an ideal case and a negative case are presented to illustrate the theory.

The theory *planning for a healthier birth and beyond* is not meant to imply stasis. The participants were interviewed at various points along the trajectory to delivery. In this social reality, there is finality; all pregnancies do end. The hope for new parents and health care providers alike is for a healthy outcome with the possibility of continued positive health care interaction. The participants in my study did not deliver unhealthy infants. Their culminating experience continued beyond integrating the newborn into the

family; they also looked at the personal growth they had gained from experiencing gestational diabetes as it related to health practices for themselves and for their family.

Getting Diagnosed With Gestational Diabetes

The category *getting diagnosed with gestational diabetes* is seen as a strategic action: a relationship of action to interaction among the health care team, the self, and the contextual conditions at the time of diagnosis. Grounded theory research accounts for a social process through interpreting the behaviors participants use to resolve their main concern. All categories do not have to be action oriented. However, in the theory *planning for a healthier birth and beyond*, each category is a dynamic activity associated with a substantive area of concern. The category *getting diagnosed with gestational diabetes* is also seen as a process, a learned experience over time: “Once I learned more about the diagnosis ...”

Participants identified *information* and *support* as the contextual conditions most important at the time of diagnosis. I interpreted the data as indicating a need for crisis intervention skills or support. The consequences of not having such skills or support included *dealing with an emotional crisis*, which, in turn, led to difficulty in *regaining a sense of control*. In his classic study, Caplan (1964) described the components of crisis theory as including a developing state of turbulence usually accompanied by a heightened state of fear, guilt, or anger. Because the human organism cannot sustain such disequilibrium, a state of crisis is necessarily self-limited. Some resolution, even if it is only temporary, must be found. Mechanisms used to resolve a crisis are considered positive, or adaptive, when they contribute to personal growth, and negative, or

maladaptive, when they contribute to psychological problems (Caplan, 1964; Caplan & Caplan, 2000).

I defined the contextual conditions for participants as self, environment, past history, and conditions surrounding the diagnosis, including timing and manner of delivery. Participants often characterized the experience of getting diagnosed as “shocking,” yet they had gone through the screening test willingly while apparently knowing that it could be positive. A positive result seemed to be most startling to the participants who had had nothing wrong early in their pregnancy. For these participants, becoming accustomed to negative test results appeared to have created a sense of false security. The participants with a repeat diagnosis of gestational diabetes had different reactions from the participants with a first-time diagnosis. The participants with a repeat diagnosis “expected it” and knew they could “get through it” because they “did once before.” In contrast, for the participants with other repeat high-risk diagnoses, such as preterm labor, the first-time diagnosis of gestational diabetes was significant. These participants already knew they could get through the other complication, but gestational diabetes was new to them. The stress and appraisal literature supports this finding. If a person has coped with something similar in the past and dealt with it successfully, she has a greater chance of dealing positively with the new challenge (Aguilera, 1998; Lazarus & Folkman, 1984).

Getting Diagnosed Under Optimum Conditions

The woman who is diagnosed with gestational diabetes under optimum conditions, with interventions taken for establishing support systems or planning for

informational needs, or both, perceives the diagnosis as a challenge. Initially, she has increased anxiety related to the threat to the health of both mother and fetus. Sensitive timing and knowledgeable delivery of the diagnosis, the woman's past experiences with coping, and her knowledge of several coping skills modify her anxiety levels positively. She perceives herself as capable of mastery and sees the diagnosis as a challenge and an opportunity to grow, both as a person and as a potentially better mother, because of the experience. She has access to immediate and follow-up access to information. She accepts help from health care team members, who may include a physician, certified nurse midwife, nurse practitioner, physician's assistant, registered nurse, or nutritionist, and she interacts positively with office staff. She relies appropriately on her partner, family, friends, church, and community. She also talks to other women who have had gestational diabetes, as available, to gain additional support during this difficult and frightening time. She is generally able to comply with medical interventions and detailed regimens to achieve a positive birth outcome for both herself and her newborn child.

Under each category, a best-case scenario and worst-case scenario are described. They are meant to imply the extreme ends of a continuum. Individual women will find themselves along this continuum for each of the attributes, or properties, listed within each of the categories.

Getting Diagnosed Under Less Than Optimum Conditions

Without interventions taken for establishing support systems or planning for informational needs, the woman perceives the diagnosis of gestational diabetes as a threat to what she sees as an already-compromised condition, i.e., pregnancy. She experiences

high anxiety levels related to the threat to the health and welfare of both the fetus and herself. The timing of the diagnosis typically is sudden and unexpected. The diagnosis is given without sensitive delivery or knowledge of the woman's other life demands. She has developed few positive coping skills, and she perceives herself as a victim. However, she does not have the ability to accept the "sick role", as participants called it, because she sees no one to help her and lacks information about where to go for help. She does not have positive social support. She lacks the financial resources to provide the meals recommended in planning guides, to buy the testing strips for glucometer testing, and to obtain reliable, convenient, easily accessible transportation. Her perception of limited available resources forces her to make hard choices between meeting her own needs and meeting the needs of her family, her living situation, and her unborn child. Her motivation to learn about the diagnosis of gestational diabetes is tempered and often squelched by a fear of the unknown and a feeling that the worst might still lie ahead. She is afraid to know about what else might happen when she is overwhelmed by dealing with what is happening right now. Her access to the Internet or time for reading about gestational diabetes is limited, resulting in less knowledge about her ability to prevent negative outcomes. Women who experience the various stressors involved in being diagnosed with gestational diabetes under suboptimal conditions continue to struggle with obstacles throughout pregnancy, and they are more likely to have less control over their blood glucose levels and to have an undesired birth outcome for mother, infant, or both.

Regaining a Sense of Control

Regaining a sense of control was an important goal for participants immediately after receiving the diagnosis of gestational diabetes. I came to see *regaining a sense of control* not only as a property of the category *getting diagnosed with gestational diabetes*, but also as the activity that defined the pregnancy with gestational diabetes in the time between diagnosis and delivery. The interaction, or focus, of this activity is a struggle that takes place on several levels. At various times and to different degrees, the struggle is with the self, with the fetus and placenta, with the health care team, and with family and friends. Thus, the property *regaining a sense of control* was separated and elevated into a category of its own because it was seen as a process that explains what the participants were continually trying to achieve. Even participants who felt it was beyond them reported feeling that they needed “some control” over “something,” and they would usually manage to find a way to achieve a measure of comfort for themselves in some area. This finding is supported in the stress and coping literature. Because the human organism cannot tolerate continuous high levels of stress, humans have adapted. They learn to find at least one aspect of their lives that is within their ability to control, which serves to decrease their feelings of overall anxiety (Aguilera, 1998; Selye, 1956; Stuart & Sundeen, 1995).

Support and information emerged as important conditions for helping participants learn how to regain control and adjust their lives to help the pregnancy succeed. Making eating and exercise changes, using insulin and other medications, and performing the required monitoring are not easy skills to develop. Participants needed information about how best to develop these new skills, and support while they tried to do so. These

findings are supported by other research (Kelleher, 1994; Keohane & Lacey, 1991; Nichol, 1993; Persily, 1996; Rotondo, 1990; Ruggiero, Spirito, Bond, Coustan & McGarvey, 1990).

The continuous motivation propelling the study participants toward delivery was a drive to “do it for the baby,” or to put the baby’s needs first. Participants characterized their condition as a pregnancy more than a disease even when they had various medical complications that threatened to overshadow the pregnancy itself. One of the consequences of not achieving the medical definition of true control of blood glucose level, for example, is that the pregnancy might be ended by the health care team at a point sooner than 40 weeks, particularly if the baby is in distress (AAP, 2002; Gonen et al., 1997; Mastrogiannis & Knuppel, 1996). The risk to the health of the baby was an important consideration for participants, and it helped them to continue their struggle and to continue trying to regain a sense of control. The participants who had information at critical times and had developed or identified adequate social support were more successful than others in regaining a sense of control whenever they felt “out of control” or feared “losing control.”

Participants seemed to internalize the medical definitions of blood glucose control their providers asked them to achieve. They reported feeling “bad,” “guilty,” “anxious,” or “scared” if their blood glucose levels were “above the range they had given to me.” Most of the participants acknowledged when blood glucose levels were above their “comfort zone” and then tried to determine what it was that they had done differently in the hours prior to testing. These findings match what the husband-and-wife team Ahlers

and Ahlers (1991) described in a case study of their own experience with a pregnancy complicated by gestational diabetes.

If participants decided that they could not have done anything differently—for example, if their fasting blood glucose levels, the first test upon awakening, were elevated despite their having done all the right things before bedtime with their snack, exercise, or insulin coverage—they could blame the problem on their body. They could tell themselves that it was not their fault; it was outside their control. The participants who had blood glucose levels that were high even when they thought they had done all the “right” things reported feeling “frustrated” because they were “working so hard” and the “numbers weren’t showing it.” Sometimes they just needed validation that they were doing well, and that the body’s changing hormone levels were responsible for the fluctuations in their blood glucose levels.

Within the category *regaining a sense of control* I developed the subcategory *stress*. One property of *stress* is *stress sensation or anxiety*, with the dimension *increased ability to focus to varying degrees of unpleasantness*. *Stress sensation or anxiety* was generally described by participants as fear, anxiety, or frustration experienced whenever they felt afraid that they had “lost control,” were “feeling the fear of the unknown,” were “frustrated” with their body, or were “anxious” that they were “doing all of this, and the baby will still have problems.” A second property of *stress*, *associated physical symptoms*, includes descriptions of irritability, a heightened sense of restlessness, nausea, clammy palms, and more frequent bowel movements. In their recent overview of anxiety disorders, DiTomaso and Gosch (2002) included these emotional and physical reactions to stress in their description of anxiety, which they characterized as an emotional

condition that can be different in any number of situations. An anxiety disorder, on the other hand, would be characterized by someone's experiencing phobia, panic attacks, a condition with excess duration, or physiologic symptoms not attributable to a medical condition, for example, heart palpitations, excessive sweating, or shortness of breath.

A third property, *alleviating conditions or behaviors*, includes supportive partners and health care givers. A fourth property, *aggravating conditions or behaviors*, includes barriers to care, transportation, financial resources, nutritious foods, supportive people, or information. The dimension for both properties is *few* to *many* conditions or behaviors. A fifth property, *onset of stress symptoms*, relates to when a participant first perceived signals that her blood glucose levels were either in control or out of control. The dimension of *onset* is *sudden* to *insidious*. A sixth property, *moods*, describes the moods participants reported as being most affected by stress. The dimension of *moods* is *least* to *most affected*. A seventh property, *triggers*, describes whether participants were able to identify conditions or instances when they felt increased stress. The dimensions of *triggers* are *few* to *many* and *specific* to *not specific*. The eighth property, *past experiences*, has a dimension of *few* to *many*. The ninth property, *coping behaviors*, has the dimension *positive* to *negative*. The tenth property, *acknowledging patterns to anxiety or stress, or both*, has the dimension *identifiable* to *not identifiable*.

The subcategory *perceived threat* has as its properties *fear of the unknown*, *loss of control*, and *expressed concerns or worry*, all of which were reported by participants to some degree. This subcategory clearly interlinks with the subcategory *stress*. *Perceived threat* was abstracted from *fear of the unknown*, *expressed concerns or worry*, and *loss of control* because the consequence of perceiving a threat is usually a feeling of general

stress or anxiety, which is commonly associated with a physical response. This response has been studied since 1929, when Cannon first identified the autonomic nervous system reaction he later termed the *fight-or-flight response* (1939). The fight-or-flight response is believed to stem from primitive human instincts and is most frequently seen when a person, or the person's offspring, is perceived to be under threat. In manageable amounts, stress on the body can also provide the heightened concentration required to focus on learning information or focusing on a goal. In excessive amounts, it can cause an overload leading to dysfunction (Selye, 1956). Because the 21st-century environment generally does not allow people to run away from perceived threats or engage in physical battles with those who threaten them, the modern human is challenged to rely on other options for managing stressful situations. Many readers may be able to recall and identify visceral reactions triggered by the terrorist attacks of September 11, 2001, which was related to both threat for self and loved ones. Silver, Holman, McIntosh, and Poulin (2002) conducted a nationwide longitudinal study of Americans' psychological responses to that day's events. The authors recognized perceived threat as a significant stressor associated with the need to develop coping strategies.

Managing stressors successfully is the underlying goal of *regaining a sense of control*. Through analyzing data, I developed an ideal case, a profile of the woman who copes with stress and perceived threat as she struggles to regain a sense of control under optimum conditions. I also developed a negative case, a profile of the woman who seeks to regain a sense of control under less than optimum conditions. These cases are composites of the study participants, meant to show variations and patterns in the data.

No single participant would be expected to fall into one category or the other, just as no person would be expected to have only positive or negative life circumstances.

Regaining a Sense of Control Under Optimum Conditions

For the woman with sufficient information and support, *alleviating conditions or behaviors* begin to ease the *stress sensations* (Coplson, 1990; Ruggiero et al., 1990). Alleviating conditions include the presence of a partner or support giver; the woman's perception of her support giver's acknowledged concern for both her and the unborn child; and the woman's perception of the support giver's willingness to help in whatever way he or she can. This woman experiences few or no barriers to care, few or no problems with health care personnel, transportation, or money for her more expensive pregnancy, and few or no barriers to obtaining nutritious foods. She is able to acknowledge which of her moods seem to be most affected by stress and can usually identify the triggers that cause distress. Because of heightened awareness, she is able to use positive coping behaviors that can quickly help her to decrease unpleasant sensations. She has dealt with stressful situations in the past and has a multitude of positive coping behaviors but few or no negative coping behaviors. She has strength and resilience, which encourage her to seek out new positive coping behaviors when the ones she has been using no longer work for her.

For this woman, perceived threat is diminished or manageable. She minimizes the stress response by downplaying or effectively managing the medical warnings about potential consequences that threaten her or her unborn child. Fear of the unknown is decreased with the availability of current, accurate, consistent, and coordinated

information among providers. Fear of losing control is diminished because supportive people encourage her to focus on the goal of preparing for a healthier birth. Health care providers and support givers are able to remind her that the diagnosis is not her fault, that she is doing “a good job of managing this difficult condition.” They might make a phone call to say “keep up the good work, I know this is tough. Hang in there.” They tell her that her body is struggling, and that they realize it is frustrating. Finally, they offer to help in any way they can.

Such support was reported to be very helpful by 2 participants in the pilot study, who reported being reminded to “keep trying” whenever they called their providers, and whose diabetes nurse educators sent them a personal note encouraging them at some point during their pregnancy. The profile is also corroborated by Armstrong (1993), who found that social support is of paramount importance for women with gestational diabetes. Armstrong gave social support priority over information and recommended helping women with gestational diabetes resolve their emotional, social, and financial concerns so that they could then seek the knowledge they needed to adhere to treatment regimens. However, although the participants in my study wanted their health care team to provide social support along with information, most reported that by the time I interviewed them they had already identified their own sources of support.

Regaining a Sense of Control Under Less Than Optimum Conditions

The woman who tries to cope with stress without sufficient information and support experiences fear, anxiety, and frustration when her blood glucose level exceeds the range of values her provider has given her. She may see no point in “trying so hard” if

what she does “doesn’t matter anyway.” She may choose not to follow the medical regimen as prescribed. She doesn’t know how to interpret the reason a blood glucose level is high, or what to do to bring it down, and may therefore cause damage to the developing fetus by ceasing to try to control it. The unregulated blood glucose levels may cause short- and long-term health consequences for her and for her unborn child (AAP, 2002). This woman may escalate her anxieties, wondering “What did I do wrong?” or “What is wrong with me?” She may also ask herself whether something or someone else contributed to her problem.

Because of her lack of support and information, this woman probably has less ability to deal with the degree of unpleasantness, and perhaps the associated physical symptoms, experienced as a result of her heightened anxiety. She has fewer alleviating conditions or behaviors that could lower her stress level, and more aggravating conditions or behaviors that heighten it. She is not apt to notice when the distress is most prevalent or which of her moods seem to be most affected, and is unlikely to be able to identify any of her triggers or have much in the way of historical context that is helpful. She may have had stress in past personal experiences, but it was not of this magnitude, or she did not develop many positive coping behaviors. She may use some negative coping behaviors that are not truly helpful to her or to her fetus in the long run, but that do serve her immediate need for self-protection.

Under less than optimum conditions, this woman has greater fears of the unknown and of loss of control. She may express more concerns or worry, and she may have more physical and emotional ailments because of carrying stress and having no real outlet for it (Baum, Revenson, & Singer, 2001; Holmes & Raye, 1967; Selye, 1956). Her loss of

control is evident in a lack of adherence to prescribed medical regimens, which may lead to loss of control over the management of the pregnancy (Habboushe, 2000). Health care providers may be legally obligated to intervene for the sake of the unborn child and may therefore plan an early delivery, if the infant's prognosis would be improved by removal from the mother's uterus.

Planning for a Healthier Birth and Beyond

The category *planning for a healthier birth and beyond* is a strategic act, or series of actions and interactions. Like *regaining a sense of control*, it is a dynamic category, its own independently active process. The category *planning for a healthier birth and beyond* consists of a relationship between the self, unborn child, health care team, and support system; the context of prior history; environment or complications, or both; and medical intervention timing conditions. *Planning for a healthier birth and beyond* is also a process that is similar to the process of other pregnancies in that women still prepare for birth (Clark & Affonso, 1976; Rubin, 1984). But preparing for birth with a pregnancy complicated by gestational diabetes is also a learning experience (Ahlers & Ahlers, 1991; Rotondo, 1990). Participants described continually having to readjust their lives, or what they were doing for treatment, about every 3 days on average. *Planning for a healthier birth and beyond* also involves an interdependence between mother and unborn child. In a normal pregnancy, the fetus is totally dependent upon the mother's choices for protection from, or exposure to, harmful conditions. In a pregnancy complicated by gestational diabetes, the mother soon realizes that her body now "does its own thing," often in spite of what had been working previously to keep her blood glucose levels

stable. Instability of blood glucose levels also makes certain anxieties difficult to control, and the mother must learn something about how to work with the body and how to let go of some of the things that cannot be controlled. Support is effective here. Without it, women with gestational diabetes struggle more (Ahlers & Ahlers, 1991; Rotondo, 1990; Nichol, Cleave, Seto, & Poullos, 1993).

Women with gestational diabetes do have control over some things, including what, when, and where they eat, and what they do for exercise. Participants admitted that sometimes their high blood glucose levels were related to what they had eaten when they ignored recommendations. Providers earned their trust by listening to these women, validating how difficult the experience was for them, encouraging them to continue their struggle, praising their efforts, and relieving them of blame for their blood glucose levels, as appropriate. Landel (1995) found that the condition of trusting their health care providers is of paramount importance for women with gestational diabetes.

All the participants emphasized that communication among members of the health care team is vital. When there was agreement or perception of agreement in what their providers conveyed, participants felt a sense of trust that they were being taken care of, and that all was going as it should. When providers did not seem to be in communication with each other, the consequence was distrust of the process; participants tended to feel either that the team did not care very much about them and their plight, or that perhaps “these people” did not know as much as they should. It was then difficult for those participants to trust that what the health care team was telling them was correct. They would begin to wonder if they should try to learn about some of those things on their own, and they would investigate what others thought. The “others” ranged from friends

and family to books, the Internet, and other providers. All of the participants could spot inconsistencies right away. If their physician, nurse practitioner, or midwife was not able to regain their trust by proving that they did know what was best, then some of the participants began to sift through the information given to them. They felt forced to evaluate everything anyone said and to select the pieces that seemed best for them in their situation. Lack of education and congruent information have a potentially dangerous consequence: Women who are not aware of the best choices for action cannot choose them. However, an equally dangerous consequence can occur when women are given a choice of conflicting options and choose the one that is most harmful to themselves and to their fetus. This is a difficult problem to resolve. Legally, the woman is in charge of her body and, in most instances, of her fetus. Landel (1995) found that a positive relationship with a health care provider was associated with increased diet and appointment adherence, that adherence was a significant predictor of glycemia, and that maternal glycemetic control was a significant predictor of infant birth weight and morbidity.

In the category *planning for a healthier birth and beyond*, the health of both mother and unborn child is a major concern. Subcategories are *commitment to the fetus's well-being* and *concern for self*. Concern for problems with the infant's health at delivery can be decreased if the infant can experience near-normal blood glucose levels in utero (Jensen et al., 2001; Moore, Bradlee, Singer, Rothman, & Milunsky, 2002). Concern for the health and welfare of the infant from birth into the future can be minimized with the behavior modifications the mother undertakes for herself while pregnant, and for the family after delivery (Xiong, Saunders, Wang, & Demianczuk, 2001). Such behavior

modifications can help prevent childhood obesity and play a substantial role in decreasing subsequent glucose intolerance (Jovanovic, 2000; Petry & Hales, 2000).

The properties of *concern for self* include achieving or maintaining optimum mental and physical health. Concerns for delivery problems with a larger infant can be minimized by close monitoring of the mother and making sure that her blood glucose levels remain within a nondiabetic range as much of the time as possible (AAP, 2002). Concerns for the mother's potential future health problems can be decreased through support and education about behavior modifications (Davis, 1997; Tamas & Kerényi, 2001). By increasing activity, decreasing carbohydrate intake, and maintaining a normal weight, type 2 diabetes and its associated side effects can often be delayed, if not prevented (Kieffer et al., 2001; Lu et al., 2001).

Another property of the category *planning for a healthier birth and beyond* comprises a number of *attachment or bonding behaviors* that I observed during interviews. For instance, many participants would gently pat or rub their abdomen when they spoke of their fetus, or they would call the fetus by the name they had chosen. Most knew the gender of the fetus and would talk about characteristics, or schedules for waking and sleeping, that they thought the fetus already possessed. "I wonder if she will be a night owl after she's born; she is quietest during the day." Participants were observed talking directly to their swollen bellies, many in jesting ways, to punctuate a conversation about physical complaints. My interpretation is that they were essentially translating these complaints to their fetus as minor inconveniences they accepted. They spoke of things they did that the "baby" either "liked" or "didn't like," as interpreted from sensations from the fetus, including such things as the effects on the fetus of certain

types of music, their voice, the voice of their partner or family members, or loud bangs and other noises. Participants demonstrated bonding and attachment behaviors through technology, as well. For instance, they would have pictures of their ultrasounds available for display, or in a convenient and safe location for sharing with people who might ask to see them. Some participants admitted that they liked having the tests for fetal well-being, because the tests assured them that all was as it should be and they were doing what they were supposed to be doing. These findings have been described in other research (Cranley, 1981; Mercer, 1995; Mercer, Ferketich, May, DeJoseph, & Sollid, 1988) describing similar observations of maternal-fetal attachment processes.

A concern for parenting ability is another property of *planning for a healthier birth and beyond*. Participants who had had prior children or who had cared for children in their past were less concerned with their ability to parent. Age did not come through as a factor in this data, although some of the more mature participants speculated that they were concerned about parenting because more years had passed from the time they had played with children, or had children in their households. In practice I have found that younger parents are often less concerned with their parenting ability than are older first-time parents. This difference may be a product of older parents' having a more realistic idea of what to expect due to life experience.

The property *valuing treatments* was also identified. Some participants were quite willing to submit to treatments performed by health care providers, but perhaps not as willing to submit to medical recommendations for personal lifestyle modifications that I call self-treatments, a finding supported by Armstrong (1993). For instance, some participants were more willing to have laboratory or amniocentesis testing but were not

as willing to remain on bed rest or decrease tobacco use. Most participants were willing to do fetal-health-based medical testing that included monitoring of fetal heart rates, ultrasounds, and even invasive laboratory testing or amniocentesis. More participants were willing to do testing “for the baby” than to do testing for themselves. Some of the medical treatments recommended during a high-risk pregnancy are more maternal-health based, such as weight and blood pressure monitoring and urine screening. Setting also contributed to the participants’ valuing treatments. In health care providers’ offices or hospital settings, most participants were quite willing to undergo such treatments, a finding that is supported in the literature (Persily, 1996; Ruggiero et al., 1990). However, in settings such as WIC Program offices or other community action programs where maternal periodic monitoring is performed, the participants were less likely to think such treatments were important. The literature is lacking in this area; researchers address treatment compliance and adherence, not attitudes toward accepting treatment. Yet a woman’s unwillingness to do a particular treatment is an indication that she does not value that treatment.

Self-treatments, which require the expectant mother to do something for herself that affects the well-being of both mother and unborn child, may include tasks such as blood glucose monitoring, medication administration, diet management, exercise or bed-rest compliance, weaning of narcotic medication use, or smoking cessation. These treatments are often seen as harder to adhere to because of their behavioral components (Lawson & Rajaram, 1994). They are more time demanding, because they may be continuous, drastically different from normal routine, and more frequent than the

provider-based treatments. They often require more energy and more discipline, as well (Habboushe, 2000; Persily, 1996).

A subcategory of *planning for a healthier birth and beyond* was originally a category identified in Glaser's 6 Cs as the covariance *time to delivery*. The subcategory *time to delivery* was defined as whether the birth date was planned in advance by the patient or by the provider, and whether the participant had experienced the alteration of expected time to delivery in a prior pregnancy. The theoretical framework of the 6 Cs helped to determine the core category and its linkages. Once the core category was established, the 6 Cs were subsumed. Because the core category was *planning for a healthier birth and beyond* and the participants were focused on the birth event, it was clear that timing of the event was a significant aspect of this category.

An important property of the subcategory *time to delivery* was originally a subcategory identified in the 6 Cs as the contingency *medical intervention*. The timing of birth can be altered, and often is. Because a birth timing adjustment is generally the decision of medical professionals, medical intervention is identified as a property of the subcategory *time to delivery*. This property ultimately affects *planning for a healthier birth and beyond* by affecting time of delivery. In cases of preterm labor, women with gestational diabetes have their time of delivery deliberately slowed down so that they will deliver later, allowing the fetal lungs to develop more fully. When timing of delivery is altered for a woman with gestational diabetes, as it frequently is, the decision is usually based on the concern that a full-term fetus will exceed the size limitations of the woman's pelvic bone structure. Ideally, the only adjustment in delivery timing would be based upon the needs of the fetal-placental unit (AAP, 2002). However, participants

occasionally reported that delivery was induced for reasons of the mother's health, the physician's schedule, or room availability or staffing in the clinical setting. Methods known to be used to change the timing of delivery include artificial rupture of membranes (AROM) and taking the infant surgically by cesarean section or with administration of hormonal medications that contract the uterine muscle, either intravenously, as with oxytocin (Pitocin), or using a vaginal suppository, as with prostaglandin. Timing of delivery can be preplanned, or it can be altered spontaneously during labor, when timing changes are generally related to fetal-placental complications (Reece & Hobbins, 1999).

The beauty of grounded theory is that it allows the researcher to capture a dynamic phenomenon and to interpret it for people who have never experienced it. The participants with gestational diabetes spoke about their lives at the stage at which they first dealt with this diagnosis. After they read their previous interview transcripts they could see for themselves the process they had lived through. They could identify or remember the feelings they were having in prior conversations, although often their concerns had long since been relieved.

Within the category *planning for a healthier birth and beyond* are properties that can easily be elevated. These properties transcend the boundaries of the social process *planning for a healthier birth and beyond* to include other life-altering events that produce a process of change in a person's outlook on the future, such as a diagnosis of cancer. Cancer patients have social support groups designed to allow people who have lived through this experience to share it with others who will understand how they feel (Staudt Dumas, 1996). A life-altering experience such as a cancer diagnosis can teach people who and what matters to them. They may gain some personal strength and

courage, or the ability to provide hope for their own future as well as trying to instill a positive sense of peace in those around them. Many persons who are close to patients with cancer have reported growth in them and in their loved one when they have lived through such an experience together. They see life differently. They may have learned different coping mechanisms, some healthful and some perhaps not as healthful. They may also have suffered from the unresolved crisis of the diagnosis and the trauma of treatment (Mundy, 2002). But whether they feel the experience resulted in growth or psychological morbidity, it has had a life-altering effect.

Based on the data presented within the core category *planning for a healthier birth and beyond*, I developed the ideal case for a woman diagnosed with gestational diabetes under optimum conditions of social support and immediate, timely, accurate information. I also developed the negative case, displaying patterns and variations in the data to give the reader a sense of the experience of a woman diagnosed with gestational diabetes under less than optimum conditions. As with the other ideal and negative case illustrations, the discussion also includes references to supporting research and theory.

Planning for a Healthier Birth and Beyond Under Optimum Conditions

Under optimum conditions of perceived support and adequate, timely, accurate information, concerns about delivery problems with a larger infant are minimized (Coplun, 1990). The conditions of support tend to be associated with better monitoring and adherence to medical recommendations, resulting in blood glucose levels remaining within the range of a nondiabetic mother for as much time as possible (Landel, 1995; Persily, 1996; Ruggiero et al., 1990). Concerns about later problems with maternal health

are decreased through support and education about behavior modifications. Concerns about problems with the infant's health at delivery and beyond are decreased with the infant's experiencing near-normal blood glucose levels in utero (AAP, 2002; Expert Committee, 2003).

When planning for a healthier birth under optimum conditions, the woman with gestational diabetes exhibits many attachment and bonding behaviors (Rubin, 1984). She has an appropriate concern for parenting ability and has prepared herself adequately to meet the challenges she perceives in advance. Habboushe (2000) found that the first two weeks after diagnosis is a critical time period for teaching because it is associated with greater adherence to self-monitoring of blood glucose levels.

Under optimum conditions, the woman's valuing treatments is measured, thoughtful, reasonable, and prudent. Time to delivery is as close as possible to a full-term gestation to minimize risks to the infant. The mother is able to interpret the signs and symptoms of labor and senses when she is ready to give birth. She is able to make arrangements for her delivery in a place suitable for managing a high-risk delivery, presents for care in a timely fashion, and perceives her labor and delivery experience as a coordinated, cooperative endeavor between the various health care team members, herself, her fetus, and her support person or persons. She will be less likely to require medical interventions.

Planning for a Healthier Birth and Beyond Under Less Than Optimum Conditions

With perceived support and information that are less than optimum, concerns for delivery problems with a larger infant are maximized. Concerns for later maternal health

problems are apt to be increased. Concerns for problems with the infant's health at delivery and beyond are also increased. The woman is likely to demonstrate few attachment and bonding behaviors. She may not have an appropriate concern for parenting ability and consequently may not have prepared herself adequately to meet the challenges she will encounter after delivery. Her valuing treatments may be based on false information about what is considered a priority. Time to delivery may not be at full-term gestation, as medical interventions may be necessary (AAP, 2002). The infant will almost certainly be exposed to more risks. The woman without adequate support or information may seek to give birth too soon. Conversely, she may be unable to interpret the signs and symptoms of labor and may not feel ready to give birth at the appropriate time. She may be unable to make arrangements for her delivery in a place suitable for managing a high-risk delivery. She may not present for care in a timely fashion and often will not perceive her labor and delivery experience as a coordinated, cooperative endeavor between the various health care team members, herself, and her unborn child.

The interrelationship of the categories is best obtained from looking at the core category. Because the core category is usually the basic social process that interprets social reality, looking at the components of the core category can often provide clues about how the categories interrelate. Using constant comparative analysis, I derived a shared interpretation of specific participant data. I made extrapolations and abstractions from the data generated by participants, but interpretation of their meaning was shared among us. All the participants were invited to take part in the analysis.

Planning for a Healthier Birth and Beyond: The Emergent Theory

According to Glaser (1992, 1998), theory is generally found by taking the core category and finding the universal elements that transcend the individual units of measure. The core category, which is generally the basic social process, was identified early in this study. In the first interview conducted, the focus seemed to be “the due date.” In another interview, it was “the delivery date”; the due date is not usually the exact date of an infant’s birth. During the pilot study, the category was called *commitment to the fetus* when it was discovered that participants were focusing on what their unborn child needed from them. In the current study, however, the basic social process participants continuously worked toward resolving was ultimately called *planning for a healthier birth and beyond*. The participants not only felt concern for the unborn child they carried, they felt concern for their own health. This was not seen as a selfish act, because the participants wanted to provide for their child and saw that their health would play a vital role in their future caretaking responsibilities and abilities.

The theory *planning for a healthier birth and beyond* denotes a strategic act, or a series of actions and interactions. It denotes a relationship between self and unborn child in which the child’s needs are often put before the mother’s. This relationship is commonly seen in pregnancies, manifested by behaviors such as giving up smoking or decreasing substance abusing. However, it is different in women whose pregnancies are complicated by gestational diabetes. These women are required to make many lifestyle changes to accommodate the health and welfare of the developing fetus. They must learn how to monitor their blood glucose levels and perhaps increase their exercise. Often, they

must change the timing, amount, and type of foods they ingest. Women diagnosed with gestational diabetes generally learn to check their urine for ketones, often have increased monitoring for themselves and for their developing fetus, and may learn to dose and inject insulin to maintain optimum blood glucose levels. All of these actions are strategically planned and conducted for the sole purpose of achieving a healthier birth.

The process component of *planning for a healthier birth and beyond* comprises the transitional stages that occur, carrying the pregnant woman closer to the day of delivery and preparing for what lies beyond the delivery. Although the main concern, or basic social process, is preparing for a healthier birth as it incorporates the health of both the mother and fetus, a major property was described by participants as “giving the infant the best start possible.” Most participants reported feeling that it was their sole duty to deliver their infant into the best environment they could create, given the resources they had available to them. Until the day of the infant’s delivery, all participants except Shelby reported that they saw creating the optimum internal and external environment as their job. Essentially, they felt they were the only ones who could do it. They usually realized that help was available but felt that the mission was primarily their own to complete.

With the exception of Shelby, the participants put the unborn child’s welfare ahead of their own, an aspect of the concept *mothering*. They focused on their unborn child and began to assume an actively protective role, even before they had met their child. In the second trimester, as one of the tasks of maternal psychosocial adaptation, women begin to acknowledge that the fetus is separate from them (Clark & Affonso, 1976; Rubin, 1975). Coincidentally, the second trimester is when women are generally screened and diagnosed with gestational diabetes. In the third trimester, women are

typically preparing themselves mentally for what being a mother will be like. However, the theory *planning for a healthier birth and beyond* describes a different commitment. Participants felt that they were working harder toward a healthy delivery than would have with a normal pregnancy. They were committed to achieving as healthy an outcome as possible given their situation. They felt that they were perhaps more ready to be a mother because they were proving to themselves that they could be there for their child when their child needed them.

Other aspects of mothering in the theory *planning for a healthier birth and beyond* include the concerns participants expressed about the time after delivery. Beyond the day of birth, the duty of providing an optimal environment would still be their concern, but they did not view the responsibility as theirs alone. At that point, participants reported feeling that someone else could take over some of the duties if necessary, or if the mother chose to share them.

In thinking about having other people help woman diagnosed with gestational diabetes, I defined social support as a property of the theory *planning for a healthier birth and beyond*. It includes the network of health care providers, the patient's family, friends, church group, pets, and access to resources. Study participants defined social support as material aid, assistance, information, and emotionally helpful behaviors. In the social science literature, social support is defined as helpful behaviors, such as nondirective support with expressions of intimacy, and tangible assistance, such as money and shelter (Hays, Magee, & Chauncey, 1994; Wilson, 2002). When personal resources have been drained, social support is the safety net. Many researchers have documented the finding

that social support helps to mediate stress (Billings, Folkman, Acree, & Moskowitz, 2000; Coker, 2002; Peterson, Folkman, & Bakeman, 1996; Ruggiero, et al., 1990).

The diagnosis of gestational diabetes has a profound impact on many different internal and external resources. Three participants in the pilot study and 5 participants in the current study discussed the issues of external and internal resources in varying degrees of detail as they talked about managing a pregnancy complicated by gestational diabetes. I have interpreted these data and obtained verification from Sarah and Emily, after writing, that my interpretations are accurate. Internal resources impacted by the diagnosis included the significant demands on the women's body and the psychosocial, physical, spiritual, and sexual energy that was robbed to meet them. This finding is grounded in the data of Molly, Haley, and Emily. The energy level required to meet the usual consuming demands of life, such as work, school, or caring for other children is well known, as are the increased stressors of a pregnancy on the body (Lowdermilk, Perry, & Bobak, 2000). Not only does pregnancy physically stress the low back and abdomen with the obvious changes in posture and the pregnant woman's center of gravity, the hormones of pregnancy serve to relax the ligaments surrounding the hips and pubis to allow for easier passage of the fetus through the pelvis. As a consequence, round ligaments and supporting musculature often become stressed, fatigued, or even strained, limiting activity and mobility (Reece & Hobbins, 1999). This was the case for 2 participants in the pilot study as well as for Sarah, Monica, and Shelby. Emily, Haley, and Sarah talked about the final consumption of their usual energy level as occurring when not only their waking hours, but their dreaming hours were plagued by worry and anxiety about the outcome of their pregnancy.

Regarding external resources, there can be significant increased costs, which are felt to varying degrees by the woman diagnosed, depending upon insurance coverage or public assistance. The following discussion, an example of shared interpretation, is driven by data from all the participants. The increased costs incurred are for testing supplies; increased visits to health care providers during pregnancy and perhaps post delivery, or hospitalizations for complications; and the purchase of low-fat, high-fiber, high-protein, and low-carbohydrate foods for the pregnant woman. The last cost may be seen as a positive change for the whole family if all are changed over to the pregnant woman's nutritional requirements, yet many women do not have families or partners who change their own eating habits. When only the pregnant woman changes eating habits, the result is the preparation of double meals and essentially double shopping. For example, assume that the milk the "rest of the family" drinks is whole. Because the pregnant woman is trying to cut fat from her diet, but is trying to ingest higher levels of protein and calcium for the unborn child's developing teeth and bones, she knows she needs to drink more milk and she needs to switch to skim milk. Unless the family compromises on 2%, 1.5%, or 1%, they are buying a container of milk for each dietary requirement. Finally, because women diagnosed with gestational diabetes often see some health care provider at least twice a week (AAP, 2002), there is the issue of increased cost for reliable and easily accessible transportation.

A pregnancy with gestational diabetes also makes an invisible demand on the woman's time. Some women have office visits two to three times a week for fetal heart monitoring such as non-stress tests and fetal kick count evaluations. Often, the initial blood glucose management visits are twice to thrice weekly, although as the pregnancy

progresses this visit is generally reduced to once every two weeks, with phone reports of blood glucose levels every three days and as needed if problems develop. These contacts do not include the visits to the nutritionist, WIC, social worker, or to the person primarily responsible for medical care during the pregnancy, such as the physician. In contrast, a low-risk pregnancy generally follows a pattern of monthly visits until the mother is 28 weeks, then biweekly visits that last about 15 minutes and do not require undressing. After 36 weeks, the visits are weekly and include internal exams but are still generally shorter than 15 minutes. Not only do women diagnosed with gestational diabetes need to take the time to learn how to achieve major lifestyle changes, they must carve out the time to meet the extra demands of office visits. This is one of their biggest frustrations. Participants who did not work outside the home mentioned “how lucky” they knew they were. They could see this time demand being “too much for them” if they had full-time jobs outside of the home. Some stated that they found it helpful at the end of their pregnancies to have daycare for a few hours every day for their children even if they remained at home. Participants who worked outside the home were often working more than 45-hour weeks, counting commuting time. However, in this particular sample, all of the women who were working outside of the home were told by their physicians to spend the last couple of weeks on bed rest because they had developed other complications, such as elevated blood pressure, protein in their urine, and edema, which is a triad of symptoms signaling pregnancy-induced hypertension. It is common for women diagnosed with gestational diabetes to be at greater risk for developing pregnancy-induced hypertension (Reece & Hobbins, 1999; Vambergue et al., 2002).

The literature supports my findings that gestational diabetes can be considered a crisis-inducing diagnosis. However, if the nurse can help the newly diagnosed woman to appraise the stressor, identify social support, and obtain immediate, accurate information, the woman diagnosed with gestational diabetes may be more likely to experience the diagnosis as an opportunity for growth than as a psychological morbidity. I reached this conclusion after analyzing the periods of greatest stressors for the participants, how they managed them most effectively, and how that data compared with current crisis and coping literature.

Summary of the Emergent Theory

Planning for a healthier birth and beyond is an emergent theory that outlines a framework for the range of strategies women use to manage their diagnosis of gestational diabetes. *Getting diagnosed with gestational diabetes* under optimum conditions of social support and timely, accurate information would mean that a woman could more effectively deal with the documented situational crisis this diagnosis yields. *Regaining a sense of control* is the woman's goal during the period between getting diagnosed and delivering the fetus. Anxiety is predictably more noticeable whenever the women's blood glucose levels are outside the reference range her provider has given her. Under optimum conditions of social support and timely, accurate information, this stressor will also subside more easily for the fearful woman. *Planning for a healthier birth and beyond* is the associated angst that comes prior to delivery. The woman is concerned about the health of her unborn child and herself. She is primarily concerned with the higher consequences of a large infant creating traumatic birth injuries for her or the fetus and the

rapid fluctuations in the neonate's blood glucose levels after birth. She is also concerned about her own health and that of her infant after delivery. Under optimum conditions of social support and accurate, timely information, this experience is more likely to be a positive one.

The participant with probable Munchausen's syndrome, Shelby, serves as a negative case for the theory *planning for a healthier birth and beyond*. Munchausen's syndrome is a psychiatric diagnosis in which the patient's need for medical attention is central despite no physical etiology to explain the patient's convincing symptoms. Because Shelby refused multiple requests by different physicians to see a psychiatrist or psychologist, the diagnosis could not be confirmed in her record. However, this participant demonstrated a distorted view of health care, her own health, and her role as a potential mother that was consistent with a Munchausen's diagnosis; individuals diagnosed with Munchausen's purposely harm themselves through health care interventions, such as wanting abdominal surgery and extended narcotic prescriptions. Not surprisingly, Shelby's data do not conform to the theory *planning for a healthier birth and beyond*. Because psychiatrically she may not have been capable of *planning for a healthier birth and beyond*, Shelby's behavior was essentially the opposite of what I expected from psychologically healthier women with gestational diabetes. The boundaries of the theory can be made clearer by analyzing Shelby's data as a negative case, which delimits the scope and breadth of the theory by explaining what the theory is not.

For Shelby, *getting diagnosed with gestational diabetes* was "just one more thing." She had a very low-key reaction to the diagnosis and may have been pleased to

have another reason to receive medical attention. She was willing to undergo an abdominal surgery during pregnancy for complaints of abdominal pain that the surgeons could not substantiate. During her pregnancy she continued to take Vicodin, a narcotic pain reliever that has documented side effects on the neonate.

The data also illustrate Shelby's not valuing the advice of her physician or nutritionist. She was less willing than other participants to adhere to prescribed bed rest or to test her blood glucose levels as often as the health care team requested. She reported that she did not have "any" blood glucose levels outside the range provided by her health care team but did not bring in her log books. Shelby did not describe the struggle to regain a sense of control in the manner the other participants did. She was proudly defiant when she described the candy bars she decided it was all right to eat. She said that because her grandparents were diabetic and she had cooked for them, she knew what she could have.

For the category *planning for a healthier birth and beyond*, Shelby reported that she believed her fetus "was ready to be born" even if it was premature. She knew that walking stimulated labor; it was the reason her physician had put her on bed rest for the remainder of the pregnancy. Yet she admitted to taking her dog for a walk every morning, even though it meant she "had to take more pain medication"; she reported that she couldn't just "lie around" because of her fibromyalgia diagnosis. Her physician was a perinatologist, a high-risk obstetric specialist. Shelby's pregnancy was high risk because of the second trimester abdominal surgery and subsequent medication usage for recurrent complaints of abdominal pain; the preterm labor; and the gestational diabetes. Her mother drove from the next state to take her to her perinatologist office appointments, which

Shelby clearly appreciated and perhaps enjoyed. She reported feeling little onus of responsibility. The rest of the family carried the financial concerns; the perinatologist's office carried the concerns for the health of her baby.

Because Shelby did not demonstrate any aspects of *mothering* or *planning for a healthier birth and beyond*, her data are not explained by the theory *planning for a healthier birth and beyond*, an emerging theory that interprets the strategies women use to manage their diagnosis of gestational diabetes. Shelby was not managing her diagnosis, and she quite clearly defied treatment despite the information she was provided.

Shelby served as an excellent negative case example for this theory. Her data ran counter to the other participants in the *planning for a healthier birth and beyond* core category. Her presumed psychiatric diagnosis explains that her data logically should be considered the opposite to most women's strategies for managing a pregnancy complicated by gestational diabetes.

Propositions

From the theory *planning for a healthier birth and beyond*, I derived the following propositions about the relationship between ideas expressed by participants and related psychological and sociological theories.

The generally unpleasant sensation of stress and anxiety is noticeable at predictable times. Anxiety levels tend to rise after the initial diagnosis of gestational diabetes and remain high for approximately 2 weeks. Anxiety levels then rise whenever

blood glucose levels are outside the expectant mother's comfort zone. They rise again just prior to delivery.

Without perceived social support and adequate, timely, accurate, and consistent information about the diagnosis, women with gestational diabetes have increased difficulty learning to manage the diagnosis and therefore have increased difficulty regaining a sense of control. Conversely, with adequate perceived support and timely, accurate, consistent information around the time they are diagnosed, women with gestational diabetes have an easier time learning to manage the diagnosis and therefore regain a sense of control sooner.

The fear of losing control, the fear of the unknown, and the anxiety that stems from a perceived threat to the health of both mother and fetus are increased whenever blood glucose levels are outside the reference range provided by the health care team. Regaining a sense of control is associated with decreased anxiety feelings and symptoms.

Known positive coping strategies include regular exercise of low to moderate intensity (Avery & Walker, 2001); diet adherence; adequate sleep and rest periods; and decreasing or eliminating caffeine, alcohol, nicotine, and exposure to other known harmful substances. Other positive strategies include venting frustrations; diversionary activities; having adequate perceived social support; adequate, timely, accurate, and well-delivered information; having a history of coping with stressful experiences; planning for the birth realities; and complying with medical advice for testing, visits, and care.

Negative coping strategies include substance use or abuse; over- or undereating; following poor treatment advice; not planning for birth realities; exercising if ordered on bed rest; or remaining too inactive after being asked to increase the regular activity level.

Although negative coping strategies achieve the short-term goal of protecting the ego as a defense mechanism, they do not result in long-term benefit to either the mother or the unborn child.

Hypotheses

From the propositions, I developed the following hypotheses:

Conditions that positively affect the ability of a woman with gestational diabetes to plan for a healthier birth and to achieve better outcomes include

1. Adequate perceived social support identified as soon as possible after diagnosis.
2. Adequate perceived social support identified whenever blood glucose levels are higher than the range specified by provider.
3. Adequate perceived social support during the birth.
4. Adequate, timely, accurate, and well-delivered information at the time of diagnosis.
5. Adequate, timely, accurate, and well-delivered information whenever blood glucose levels are higher than the range specified by provider.
6. Adequate, timely, accurate, and well-delivered information about the birth.
7. Diet adherence.
8. Adequate sleep and rest periods.
9. Decreased or eliminated exposure to caffeine, alcohol, nicotine, and other known harmful substances.
10. Venting of frustrations.

11. Diversionary activities, especially for women on bed rest.
12. Regular exercise of low to moderate intensity, as permitted for condition.
13. History of coping successfully with prior stressful experiences.
14. Planning for birth realities.
15. Complying with medical advice for testing, visits, and care.

Conditions that negatively affect the ability of a woman with gestational diabetes to plan for a healthier birth and to achieve better outcomes include

1. Few attachment or bonding behaviors.
2. Lack of concern for fetal well-being.
3. Lack of concern for health of self.
4. Lack of concern for parenting ability.
5. Inadequate information about timing of delivery.
6. Possible medical interventions in timing of delivery.
7. Lack of social support, especially significant relationships.
8. Lack of information about the diagnosis.
9. Lack of information about treatment.
10. Lack of information about the expectations of health care providers.

**What Differentiates Planning for a Healthier Birth and Beyond
From Coping Strategies Used in Other High-Risk Pregnancies?**

First, I compare and contrast aspects of Corbin's (1982) theory of coping with high-risk pregnancies, *protective governing*, with *planning for a healthier birth and beyond*. Next, I discuss research on gestational diabetes or coping with high-risk pregnancy diagnoses published since the initial literature review, comparing these studies with the setting of the current study.

Corbin's (1982) theory *protective governing* analyzes the conditions that place a pregnancy *on course* and in a lower risk context along with those risks assessed during the *off-course, noncritical* context. Off course means that a pregnancy is deviating from the usual pregnancy management and routines; noncritical means the absence of any immediately life-threatening problems. For an essentially normal pregnancy, Corbin describes the physical, interactional, temporal, and objective cues that lead women to conclude that the problem they face is to keep risk contained and the illness and pregnancy on course. The women in Corbin's study saw that they had a choice of treatment options. They believed in joint management, which is what Corbin described as a shared responsibility for the woman's care between the woman and the health team. The health team's controlling strategies were called *overseeing*. The women's controlling strategies were called *investing in a healthy baby and self*. The spouse was described as *watching over his investment*. Concerns about the outcome were kept to a minimum, provided that the women felt they were on course. When risk perceptions differed between the women and the health care team, strategies for convincing the other were

seen. The outcome of a pregnancy kept on course was the payoff of a healthy baby and mother.

For the pregnancy that Corbin (1982) referred to as off course and noncritical, risks were assessed to be high and the pregnancy or illness, or both, was off course because something had gone wrong with the pregnancy. Either the mother or the baby was no longer stable. Some complication threatened the outcome but had not yet reached crisis proportions. The pregnant women were given cues when things were off track and positive cues when there was reassurance that they could still deliver a normal infant. The problem, as these women in Corbin's study saw it, was to now bring the illness or pregnancy, or both, under control, and to set it back on course in order to contain risk. The women were still highly motivated to deliver a healthy baby. Sometimes they had to make tradeoffs, which meant taking a medicine that had potential side effects, if the gain was saving the pregnancy. The women in Corbin's study would barter for the medication of lowest risk to their infant. Though the baby was given priority, the decision to put it first could be difficult when the requirement to move in with family members or to quit a job meant additional stress or financial disaster for the rest of the household. The women in Corbin's study entrusted their providers with the task of helping to steer them in a proper direction for the best outcome. In response, the health care team increased their controlling efforts. Women generally complied with their treatment regimens, but on occasion they would resort to taking back the control they had delegated. Spouses often became temporary caregivers, providing more in terms of support for their partners and also managing the rest of the daily chores. Concerns for the consequences were increased when the pregnancy was off course. Corbin called the protective strategy women used

when they feared they might not have a healthy baby *holding back*. This meant they did not stock the nursery, for example, until the risks had been contained. When the strategy was successful, the risk was contained.

There are similarities between women diagnosed with gestational diabetes and the women just described under the condition of noncritical but off-course pregnancies. Corbin's (1982) sample included women who had premature labor, bleeding, or preeclampsia, or who had been told that their baby was not growing well in the uterus. Corbin did not mention having anyone in her sample with a diagnosis of gestational diabetes. Depending on the support and information surrounding the time of diagnosis, I would say that gestational diabetes is one of those conditions that often does reach crisis proportions.

The participants in my study were given cues when their pregnancy first started going off course, and they were given positive cues whenever there was still hope of delivering a healthy infant. According to the theory *planning for a healthier birth and beyond*, delivering a healthy infant is a paramount concern for women diagnosed with gestational diabetes, just as Corbin found for women with noncritical off-course pregnancies. However, the participants in my study had an additional concern about their own health; there is a chronicity to the diagnosis of gestational diabetes that is not present with premature labor. For example, if a woman chooses to never again become pregnant, a prior diagnosis of premature labor does not affect her future health, but a prior diagnosis of gestational diabetes puts her at risk for multiple problems whether or not she ever becomes pregnant again.

Like women with noncritical off-course pregnancies, women diagnosed with gestational diabetes are often seen as balancing the risks and benefits of any proposed medical intervention. However, the participants in Corbin's (1982) differed from the participants in my study on the issue of taking medicine. The participants in my study were assured that insulin by injection, which is often the primary medicine used to manage gestational diabetes, does not cross the placenta; oral diabetes agents are not used in pregnant women because of the risk of crossing the placenta and causing complications for the infant. For participants in my study, therefore, the risk-benefit tradeoff of taking medication was less of an issue than it was for participants in Corbin's study, who were concerned with taking oral medications for preterm labor that are often experimental and have side effects.

Like the participants in Corbin's (1982) study, the participants in my study were generally observed to put their fetus's needs before their own. The participants in my study usually adhered to medical regimens, balancing what was prescribed with their own needs and resources. If they did not receive consistent, accurate, timely, adequate, and understandable information, however, they were less likely to comply with all the components. Instead, they chose the components that made the most sense to them, which is similar to what Corbin called *taking back the delegated control*.

The spouses or partners in my study were not directly assessed, but they were viewed as providing less in terms of caregiving than the spouses or partners in Corbin's study, although the partners who were most involved ate the same diet as the participant with gestational diabetes, increased their activity to provide mutual support, and took over more of the other children's care when the mother had to do testing. In contrast to

the participants in Corbin's (1982) study, most participants in my study reported they did not see that their partners were greatly affected by the diagnosis of gestational diabetes.

In my study, the expectant mothers' concerns about a poor outcome for the fetus was highest whenever their blood glucose levels were out of control. When their blood glucose levels were within normal ranges, they continued *planning for a healthy birth and beyond* with the usual activities. Unlike Corbin (1982), I did not assess whether the participants held back on obtaining infant supplies when their blood glucose levels were out of normal ranges. However, I did find that planning was altered, for example because the participants were trying to make accommodations for a larger infant. It may be that while women diagnosed with gestational diabetes can achieve crisis proportions, the spectra of death of the infant is more rare with gestational diabetes than for some of the conditions Corbin studied.

It is apparent that Corbin's (1982) theory *protective governing*, notice that she also uses a process oriented theory title, does not explain the data in my study with women diagnosed with gestational diabetes. Corbin's study examined high-risk pregnancies, but because she did not collect information regarding women diagnosed with gestational diabetes, the implications of her theory are different from the implications of *planning for a healthier birth and beyond* in several important ways. The women with gestational diabetes were more concerned about their health beyond delivery than the women with noncritical off-course pregnancies. The women were perhaps less concerned with the issue of medicine, because the primary medication used in gestational diabetes does not affect the fetus. The spouses in my sample were not as involved as with the spouses in Corbin's study. I did not assess whether the participants held back on

obtaining infant supplies whenever their blood glucose levels were outside of normal range. However, the interesting piece is that my core category which was originally termed *commitment to the fetus* and later became *planning for a healthier birth and beyond* would perhaps also apply to her sample because the women in both samples were also willing to put their infant's needs before their own.

As I see the theory *planning for a healthier birth and beyond*, I am struck by how these women now view their own health differently right from the time of diagnosis until after the delivery. Rumbold and Crowther (2002) concluded that the diagnosis of gestational diabetes had an adverse impact on women's perceptions of their own health. They had used the Spielberger State-Trait Anxiety Inventory, Edinburgh Postnatal Depression Scale, and the Medical Outcomes Study Short-Form 36-Item Health Survey. Rumbold and Crowther tested emotions from a quantitative perspective at different times during the pregnancy, thus capturing changes over the course of the pregnancy. The two measurement strategies Rumbold and Crowther are more sensitive than ones used in prior studies and probably more accurately provide information about the range and depth of emotions over pregnancy. The Rumbold and Crowther study, as well as my study, contradict the findings of Spirito et al. (1989) and Langer and Langer (1994) which indicated no impact of a gestational diabetes diagnosis on mood by using the Mood States-Bipolar inventory survey. I believe that qualitative studies such as mine allow women to describe the impact of the diagnosis. If a quantitative method is used, researchers can more accurately interpret the experience by using a tool that includes that specifically measures anxiety traits.

Coffman and Ray (2002) researched African American women's descriptions of support processes during high-risk pregnancies and postpartum. Four of the women in their sample, one of whom was coping with gestational diabetes, told in-depth stories. The theory of support generated was termed *mutual intentionality*, meaning that the support givers and the mothers played mutual roles in the helping process. Themes included "being there, caring, respecting, sharing information, knowing, believing in, and doing for the other. For support to happen, the therapeutic relationship must be valued as a mutual resource," the authors found (p. 536). The importance of social support to mitigate stressors was also identified in my current study. The findings of Coffman and Ray's study and the findings of my study both suggest that perhaps in the study by Spirito et al. (1989) the subjects had received appropriate levels of support to facilitate the adjustment they showed when they were questioned.

Levy-Shiff, Lerman, Har-Even, and Hod (2002) evaluated biological and psychosocial risk factors in high-risk pregnancy and their relation to infant developmental outcomes for a sample of 153 Israeli women with gestational diabetes, pregestational diabetes, and no diabetes. The infants of mothers with diabetes scored lower on the tests and revealed more negative behaviors and fewer positive behaviors than did infants of mothers without diabetes, suggesting that the diagnosis impacts women and their offspring psychosocially even beyond the period of diagnosis. This finding is congruent with the theory *planning for a healthier birth and beyond*, in which preparing for the birth extends beyond the pregnancy.

High-risk pregnancies are challenges for the health care team. There are two patients inside one body. Either of these patients can be high risk at different times for

different reasons, and the implications can be lifelong both physically and psychologically. The one patient they have the least access to, the fetus, is the one who is the most dependent on the other patient, the mother, to whom they generally have more access. How the mother views her health and provides for her fetus is very important for improved societal health.

**Relationship of Planning for a Healthier Birth and Beyond
to Other Psychological and Sociological Theories**

Moos: Problem-Focused Coping Versus Emotion-Focused Coping

Moos (1986) describes major sets of adaptive tasks involved in managing life transitions and crises as follows:

- (a) Establish the meaning and understand the personal significance of the situation;
- (b) Confront reality and respond to the requirements of the external situation;
- (c) Sustain relationships with family members and friends as well as with other individuals who may be helpful in resolving the crisis and its aftermath;
- (d) Maintain a reasonable emotional balance by managing upsetting feelings aroused by the situation; and
- (e) Preserve a satisfactory self-image and maintain a sense of competence and mastery.

(p. 11)

Moos (1986) also describes the skills necessary for coping with a difficult situation. Some people use one skill; many use a combination. The skills are grouped in

three styles: appraisal-focused coping, problem-focused coping, and emotion-focused coping. Appraisal-focused coping is “logical analysis and mental preparation, cognitive redefinition, and cognitive avoidance or denial” (p. 144). Problem-focused coping, the style used by many of the participants, includes the behaviors “seeking information and support, taking problem-solving action and identifying alternative rewards” (p. 144). Emotion-focused coping includes “affective regulation, emotional discharge and resigned acceptance” (p. 144). Moos offers examples of each coping style and the accompanying behaviors that are often seen. I could identify crossover, with the same participant using behaviors from different areas. For example, in making repeated visits to the library to desensitize herself to the hospital environment, Sarah used affective regulation, a method of emotion-focused coping. She also sought information and support, a method of problem-focused coping. Moos’s theory of coping takes into account how complex people’s lives are and how complex their coping strategies can be.

Although Moos’s is a more general theory, the principles are consistent with *planning for a healthier birth and beyond*. The findings of this study support the assumption that the diagnosis of gestational diabetes and the resultant medical regimen are generally crisis inducing. Moos’s theory of life transitions and crisis management adequately addresses the complexity of experiences that women with gestational diabetes may encounter and offers an acceptable model for health care providers to use.

Aguilera: Perception of Event, Coping, and Support

Aguilera’s (1998) three balancing factors, perception of event, coping, and support, create a simplistic paradigm for early mobilization of support that is a standard

model used in nursing. In this model, a “hazardous situation” with a difficult life event disturbs the human organism’s normal state of equilibrium and results in a situational crisis. As with cognitive theory, education is used to change the individual’s perception of the event. With the presence of balancing factors such as a realistic perception of the event plus adequate situational support and adequate coping mechanisms, the problem is resolved, equilibrium is restored, and crisis is averted. When one or more balancing factors are absent—if perception of the event is distorted, if adequate situational support is lacking, if coping mechanisms are inadequate—the problem goes unresolved, disequilibrium continues, and a crisis results.

This model is routinely used in clinical settings, perhaps because of its simplicity. The goal is to convey a sense of urgency. As Moos (1986) suggests, the time when people feel most vulnerable is also the time when they are most open to outside help and suggestions. Aguilera (1998) looks at crisis as an opportunity for growth and positive change. In fact, the cover of her book features the Chinese symbol for crisis, which is a juxtaposition of the symbols for danger and opportunity (see Figure 2). This symbol spoke to me. Growth is always something to be wished for in a crisis, although the opportunity for growth is often not immediately evident.



Figure 2. A Chinese symbol of crisis.

Note. Figure drawn by Scott Lyons and Hui Ling Chang of South Portland, Maine.

Aguilera's (1998) theoretical algorithmic model is clear. Individuals seeking help are asked how they define the problem that brought them in, what their perception of the event is, what situational support is available, what they usually do when they have a problem they cannot solve, and whether they are suicidal or homicidal. Intervention planning is based on the case and how much disruption there has been to the person's life. Focus is on only the immediate problem. Action is initiated on the premise that the expected result will occur from the planned action or actions. An evaluation determines whether the intervention worked for the person, how it could be done next time to achieve even better results, or why it didn't work.

Planning for a healthier birth and beyond is consistent with Aguilera's theoretical model. Perception of the event, building social support, and looking for alternative coping strategies when the ones the person is accustomed to using are no longer working to relieve anxiety, are similar in both theories. I would focus the reader on the importance

of support and timely, accurate information to reduce the anxiety of a first diagnosis of gestational diabetes.

Lazarus and Folkman: Appraisal of the Stressor

According to Lazarus and Folkman (1984), primary appraisal of stress begins with the question “Am I okay?” The theoretical model then follows an algorithm-style flow chart, where a person can decide along a continuum whether a stressor is irrelevant, benign-positive, or stressful. If the stressor is seen as stressful, the person must then look at the continuum to decide if they see this as harm or loss, a threat, or a challenge. The secondary appraisal is “How will I handle the situation?” From there the continuum is either problem solving or palliative. The four ways of problem solving are information seeking, direct action, inhibition of action, and management of ego-defense mechanisms that are either adaptive or maladaptive.

Lazarus and Folkman (1984) view the process of adapting to stress as dynamic, and their model allows for constant feedback and perhaps also for multiple problems to be solved at differing levels in the algorithm. Cues provided during the primary appraisal help a person to make judgments during the secondary appraisal. Different coping mechanisms and changing feedback cues, both internally and externally, lead to ongoing reappraisals. The benefit of this model is its focus on the perception of the stressor; the dynamic process may lead to a change in the initial impression of the original stressor.

In *planning for a healthier birth and beyond*, the participants demonstrated cue-taking for feedback. They generally listened to the feedback from their blood glucose self-monitoring devices, from their health care team, and from other sources they

considered to be trustworthy. When a cue indicated that they were out of the medically acceptable range, they generally became anxious and tried to manage that stressor.

Lazarus and Folkman's (1986) focus on perception of the stressor must not be lost. It must be evaluated frequently by the health care provider and eventually by the woman with gestational diabetes independently. If an outcome is judged to be too overwhelming and the woman does not feel she can master it, then she is more likely to resort to maladaptive coping strategies, which are considered psychological defenses that repress or continue to distort the stressor. A maladaptive coping strategy means that the woman with gestational diabetes does not allow the problem to be dealt with appropriately.

Planning for a healthier birth and beyond and Lazarus and Folkman's (1986) theory are compatible. If the health care provider helps the woman to understand the stressor accurately, and provides information that does not overwhelm her but allows her to feel informed and capable, then she is more likely to master the challenge of the diagnosis.

Antonovsky: Sociological Model of Stress

This model allows for a broader understanding of the person to assess sense of well-being. Antonovsky first asks if people have comprehensibility or understanding, then asks whether they have resources to manage and what constitutes the meaningful life context. Essentially, he theorizes that stressors are part everyday life and that when various factors are in place, stress can promote health, not just disease. Some people are resilient, forgiving, and goal oriented despite tragic circumstances. His model asks "Why

do they do so well, while others crumble with minimal pressure?” He theorizes that a sense of coherence carries the individual, family, or group toward working on a solution. He further states that the notion of “control” is arrogant. Most of the time we can have no such control, and cohesion is a healthier goal (1979). Within the model of cohesion, “meaningfulness” is when someone confronted with a stressor feels a sense of engagement, a belief that the goal is worth attaining, and a willingness to cope with it (1986, p. 139). When managing life’s demands, instead of focusing on the question “How does chaos emerge?” one should be asking “How does order emerge?” Antonovsky’s theory focuses on health rather than on disease.

Although this sociological model of health and coping has been around for several years, it has not been widely adopted. For the most part, the theory is compatible with *planning for a healthier birth and beyond*. Both theories address the sense of engagement and greater purpose. The participants focused on the greater good that would come from their personal sacrifice and on their hope that all would work out for the best and they would also gain improved health habits for their future.

The participants’ ultimate goal was to plan for a healthy baby, not always the “healthiest” baby; but the “mother” instinct always pushed them to be “better” than they were now. They felt the need to live in a “healthier” way for a better birth outcome. The participants understood, after considerable frustration, that it wasn’t all up to them, that in some ways their bodies were controlling them and controlling their lives. However, they were comforted by knowing that they were struggling toward a goal that was well worth attaining, and they demonstrated a continuing desire to cope with the struggle the best they could. In that sense they felt more in control, but maybe what they had was a sense

of cohesion. The finding that the participants felt so “out of control” at times warrants further study.

In conclusion, *planning for a healthier birth and beyond* better focuses the reader on the specific needs of the woman with gestational diabetes than other psychological and sociological theories. The woman with gestational diabetes needs to be treated as though the diagnosis is a crisis-inducing event in order for the health care team to plan most effectively for her immediate needs. During the first 2 weeks after diagnosis, she needs identification of social support and timely, accurate information. Appraising the newly diagnosed woman’s perception of the diagnosis and understanding her varied social context will allow the nurse and the health care team to better plan interventions for this woman. The literature demonstrates that adherence to regimens has been associated with having social support and early, accurate information. Adherence to regimens has been associated with improved glycemic control. Improved glycemic control has been associated with improved maternal and fetal outcomes.

Planning for a healthier birth and beyond is more appropriate to the woman with gestational diabetes because the data were collected specifically from that population. Although the high-risk pregnancy theory *protective governing* has elements that address some of the same problems seen in my data, it does not explain all of my data. Similarly, the psychological and sociological theories support my findings but do not address the uniqueness of the studied population. Women with gestational diabetes have needs that involve many disciplines, and comprehensive health care planning is required to address those needs. Nursing is the profession best equipped to engage the other disciplines in

helping these women because nurses have more contact with patients in a variety of settings, and because a focus on patient-health education is part of the nursing discipline.

Implications for Nursing Research

This study developed the midrange nursing theory *planning for a healthier birth and beyond*. The theory is “abstract, universal, and transcendent” (Glaser, 1978). As a midrange theory, it is smaller in scope than a grand theory, but it allows various applications. Within nursing, *planning for a healthier birth and beyond* can be useful in practice, research, education, or administration.

I believe that further grounded theory research should include an expansion of this study with a similar but larger study population examining, “testing” (Glaser & Strauss, 1967), and perhaps adding to the 25 hypotheses developed in this study. A different grounded theory study could be done to explore how women manage other high-risk pregnancy diagnoses. Although some of the participants in this study did have other coexisting high-risk pregnancy diagnoses, it would be logical to analyze other high-risk diagnoses, either separately by diagnosis, or across diagnoses, for similarities and differences to the diagnosis of gestational diabetes. The concept definitions, conditions, and consequences developed in this study could be applied to other situations to see if they fit, and, if not, to determine why not. This would be seen as a welcome extension of the theory *planning for a healthy birth and beyond*.

Still on the qualitative end of the research continuum, in addition to assessing larger populations and other high-risk pregnancy conditions, grounded theory researchers should examine other populations and other geographic areas. Research is particularly needed to analyze the factors of culture and ethnicity and how they influence coping strategies. This sample had socioeconomic diversity, but, as with all qualitative studies, the total sample was small.

Finally, because the lens through which the researcher views the world affects what is studied, I believe it would be valuable for researchers with different backgrounds to examine the data from this study. My obstetrical experience is likely to have provided me with an ability to see similarities and differences in the data more readily, using constant comparative analysis, and possibly allowed a more rapid building or linking of concepts from what I viewed as valuable data, than a researcher without that background would have. On the other hand, if a researcher from a different background had conducted the current grounded theory study, would the lack of obstetrical knowledge offer more ability to view the data differently?

A qualitative study analyzing the finding that women with gestational diabetes often feel “out of control” could be beneficial. Is this a universal sentiment for gestational diabetes resulting from the pressure to have blood glucose “control”? Or is that emotion created by a sense of chaos related to being in a state of crisis? Because there is documentation that anxiety is associated with higher glucose levels (Cabulum, Robbins & Rosas, 1987), future research to determine the source of this out of control feeling might eventually lead to a better understanding of the phenomenon, which in turn could

potentially lead to the development of more effective interventions. Better interventions could then lead to better outcomes.

From the list of coping strategies identified by the participants in this study, a quantitative study could be undertaken to determine overall physical as well as psychosocial effectiveness ratings for each intervention (e.g., information at time of diagnosis). A Likert-type scale could be used to identify interventions that are “very helpful” to “not helpful.” In addition, demographic factors, such as age, education, income level, drive time, religion, ability to drive self, whether employed, for how many hours, and lapsed time since gestational diabetes diagnosis, could be analyzed for the interventions used. A more thorough analysis of demographic factors would allow clinicians to view which intervention types would have the highest success ratings for certain segments of a population. For example, for the intervention “information at the time of diagnosis,” a researcher could evaluate the types, amounts, methods, and timing of information that made the most difference, and to which segments of the population.

Finally, the psychosocial risks of gestational diabetes for the mother and the child postdelivery warrant further study. It would be beneficial to see if the Israeli study by Levy-Shiff et al. (2002), when repeated in a different location with a different sample, would have similar results. Levy-Shiff et al. concluded that mother-infant interactions 1 year postdelivery were associated negatively with gestational diabetes. The authors found that maternal coping was different in women with pregestational or gestational diabetes than in women with no diabetes; at 1 year, the offspring of women with gestational diabetes had lower test scores, and revealed more negative behaviors, than the offspring

of mothers without diabetes. This psychosocial phenomenon warrants further investigation.

In general, future research in this area needs to consider the qualitative-to-quantitative continuum. Grounded theory methodology allows researchers to continue expanding what has been identified within this study. With continued research,, such as quasi-experimental studies providing intensive education or support-group intervention after diagnosis, quantitative methodologies could be used to test the hypotheses outlined and successively analyze whether they are supported. Continued research can eventually change nursing education and nursing practice.

Implications for Nursing Education

Undergraduate nursing education generally focuses on the low-risk obstetrical client. Complications of pregnancy are often covered only briefly or not at all, because high-risk obstetrical and neonatal content are not emphasized on the NCLEX-RN exam, the assessment test that all states in the U.S. require nurses to pass in order to become registered and engage in practice. Based on the data in this study, I would argue that gestational diabetes should be covered in nursing curricula more thoroughly.

The last decade of research supports the long-term implications of gestational diabetes for both the mother and the infant. Given the obesity epidemic within the U.S. as a contributing factor in an eventual diagnosis of gestational diabetes or type 2 diabetes, nurses will be seeing more cases of diabetes in the future (Expert Committee, 2003; Winkler et al., 2002). Diet and exercise changes are often the way to attain normal blood glucose levels; they require lifestyle changes that are never easy. Gestational diabetes impacts women in profound ways and can continue to affect them and their offspring both physically and psychosocially beyond delivery (Levy-Shiff, Lerman, Har-Even, & Hod, 2002).

Nurses need to better understand the complexity of the gestational diabetes diagnosis from the woman's frame of reference. Each situation is different, and each woman has different strengths to work with and different weaknesses to overcome. Furthermore, an in-depth knowledge of how women experience gestational diabetes could help sensitize students to the many conditions that require lifestyle changes and help nurses and patients work together as partners in making those changes. I would like

nursing students to see that these women need access to more immediate information and often need help identifying sources of social support (Habboushe, 2001; Persily, 1996; Rotondo, 1990; Ruggiero et al., 1990). Nurses can make a difference in the lives of women with gestational diabetes by being cognizant of the women's social realities.

Future nurses are needed who can better help these women through this challenging time period. The positive behaviors, such as increased exercise, learned and used to effectively lower blood glucose levels during a pregnancy complicated by gestational diabetes, can help after delivery as well. It is believed that exercise, weight management, and dietary modifications can serve to delay diagnosis of type 2 diabetes (Kieffer et al., 2001; Lu et al., 2001). The effect of incorporating exercise into the woman's lifestyle would serve as a positive model for the family unit. This modeling of healthier behaviors has been associated with decreasing the likelihood for childhood obesity (Jovanovic, 2000; Petry & Hales, 2000; Xiong, Saunders, Wang, & Demianczuk, 2001). With future students in the health-related majors empowering women with this information, these women can be more informed health officers for their family.

Within the graduate nursing program curricula, the theory *planning for a healthier birth and beyond* can also apply. Within advanced nursing programs, nursing students have the opportunity to engage with clients in a different manner. As an advanced practice clinician, I can see this theory being useful to the clinical nurse specialist or nurse practitioner graduate student in helping women with gestational diabetes. The better a student understands gestational diabetes, the more the student can assist clients in coping and adhering to treatment. This midrange theory is applicable to education in all nursing practice areas for improving the care of women with gestational diabetes and

perhaps also for providing a richer understanding of coping processes for patients with other chronic conditions.

Implications for Nursing Practice

Knowing that women diagnosed with gestational diabetes are thrown into a crisis mode at predictable times is helpful when planning how best to proceed with their care. These predictable times are (a) upon diagnosis, (b) whenever their blood glucose levels are out of range, which could happen as often as every 3 days, and (c) again when the women are nearing delivery. Women with gestational diabetes require an accurate appraisal of threats and identification of resources. They need to have social support identified and information given immediately but in frequent, manageable amounts tempered by explanations and the opportunities for questions. Based on the recommendations of the study participants, practitioners should deliver the diagnosis in person, not over the telephone. Generally, women would prefer to have someone with them when they are told of the diagnosis, both because they require support and because they need help managing the information when they are “glazed over,” as several participants characterized it.

The study participants requested a phone number of someone who had had this diagnosis before that would agree to be at least a phone buddy with them. They felt they needed to speak to someone who had gotten through this. The women realized their experience would likely be different, but they wanted to talk to someone who “really

understood how they felt.” The opportunity to call on someone for menu help or nutritious snack ideas was also identified.

If it were at all possible, the opportunity to meet other women diagnosed with gestational diabetes, even after they had delivered, would be useful. Study participants expressed an interest in a support group of sorts. They recommended that someone with a professional background (registered nurse or licensed social worker) facilitate it at first, but that perhaps not all of the meetings would require this. It might even work to have every other meeting facilitated, or to have the facilitated meetings formally, and the permission to meet informally as needed with whomever they choose.

One participant mentioned having the support group be part of the appointment day. For instance, the office would schedule all of their women with gestational diabetes in a certain time block. In one office the block might be every Friday afternoon. Some participants visited their provider weekly; others need to come to the office less often. Ncould plan a support group meeting on the first Friday of each month. The women could plan for a group meeting in the office conference room during that block of scheduled appointments. Some women would have the meeting in between their fetal heart test and their provider visit, others would have done both, and some would have their testing and provider visit following the support group session. It could be simply a group support session, or some of the time could be devoted to a miniclass or informational session, with information that could rotate every 4 months, because most people are not pregnant with gestational diabetes longer than 2 months. Anyone who was recently diagnosed, currently diagnosed and treated in that practice, or recently referred

could be eligible. The women, or a group of rotating volunteer sponsors, could bring in nutritious snacks.

Study participants also expressed interest in a newsletter. They thought it would be helpful if a newsletter came from a nearby diabetes center or a regional high-risk obstetrics office where women diagnosed with gestational diabetes are often seen. The participants said that they would read it even after their pregnancy for a few years because they might choose to have another pregnancy. They thought it would be helpful if the newsletter contained synopses of current research, changes in care or facilities, or other articles relating to gestational diabetes or the women who are living with it. They also wanted to see menu suggestions or snack ideas; several participants noted that eating the same things every day became boring. They agreed that they would enjoy getting the newsletter in the mail for a small fee, or by e-mail for free as a member of an electronic mailing list, and expressed a willingness to help out by writing an occasional column, or folding newsletters and stuffing envelopes. As a practitioner, I can see benefits both to the patients and to the practice bottom line if former patients continue to feel connected to their providers. Some will become repeat customers, and it might be possible to win back the trust of a patient who felt her prior experience was less than optimal. I think a newsletter printed a minimum of twice yearly is a relatively inexpensive method of maintaining contact, disseminating useful, accurate, up-to-date information, and helping to fill the void participants described as “feeling like the only one with this diagnosis.”

There are now self-help groups on line, and the Internet was helpful to some participants; a few did not have Internet access at home, although I think the Internet will be used more extensively in the future. However, participants reported that the

connection to “real” people was more important. One reason for this was their hope of seeing a baby who had turned out well. Another reason was their sense that even though going to a large, high-risk obstetrics practice often requires adjusting to differences in medical management, moving to another practice might require adjusting to even greater differences. They also wanted to be with other women who could relate to them.

Limitations of the Study

As with most qualitative studies, the sample is small. Therefore generalizability is not possible, nor is it the goal. The goal of qualitative data is insight into and understanding of a phenomenon. Diversity within a sample is still valued. There is known diversity for the gestational diabetes diagnosis with regard to concurrent problems, and for other factors influencing the participants, such as their sociocultural, environmental, and psychological contexts. However, the study sample was not racially diverse, and all of the participants spoke English as a first language. The participants varied in their economic standing, which ranged from reliance on meager entitlement funding sources and public assistance to relative financial comfort with a husband’s income maintaining the family expenses. The educational preparation within the sample varied as well, from a woman who had obtained a GED to a woman with a master’s degree in education. The geographic distribution varied among coastal, mountain, urban, and rolling hill country settings, but it was confined to two neighboring northeastern states. The participants were spread over a distance of 200 miles.

The biggest limitation with this study was the change in the method of data collection. For the pilot, I interviewed participants for 1 hour on each visit; some women had as many as three visits. For the current study, I interviewed participants three times for 30 minutes on each visit. Emily was the only participant carried over from the pilot study, because she was the only one with a first-time diagnosis of gestational diabetes. She provided double the amount of data the other participants provided, so her quotes are more numerous than the other participants'. The 2 participants who agreed to take part in data analysis were asked to read the quotes for each section, and they often picked Emily's as "ringing true" for them or someone else they knew. Each time a quote of Emily's was used, I added a few words of the quotes from the other participants to echo sentiment and to show that other participants were asked about and often agreed with Emily's statements.

The data were filtered through one relatively inexperienced interpreter who has known and unknown biases that will affect the product. This limitation is accepted, and, because of it, the onus of responsibility is on me to display the findings and accurately describe the analysis to allow the reader to feel convinced that the conclusions are trustworthy and fit the data.

Summary

The theory *planning for a healthier birth and beyond* best explains a process by which the woman diagnosed with gestational diabetes manages in a specific pattern using an array of strategies. The anxiety these women experience comes at predictable times. It occurs after diagnosis, whenever their blood glucose levels are outside of their comfort range, and when the time for delivery approaches. The anxiety is best managed at all of those stages by information and various sources of social support. I propose using a crisis approach with these women when they are newly diagnosed. The first 2 weeks sets the stage for later adherence to the treatment regimen. With this diagnosis, the need for client participation is so high that adherence is crucial for attaining positive birth outcomes. Nurses can play a critical role in the first 2 weeks following a client's diagnosis. The nurse can assess the client's unique context and provide her with manageable, accurate, timely information, allow for contact with questions, and help her to identify social support. This is a diagnosis where the role of nursing in providing education and support is crucial if the patient is to achieve the best birth outcome possible. Using the perspective of the theory *planning for a healthier birth and beyond*, nurses and other health care providers can help women with gestational diabetes focus on the goal of achieving a healthier birth by managing the diagnosis of gestational diabetes and by regaining a sense of control.

This grounded theory study was undertaken with the intention of providing nurses with a richer understanding of how women experience gestational diabetes. Such an understanding will lead to a better mutual planning and goal-setting process that can give

the patient an increased sense of participation and control. Through supporting, teaching, and reinforcing, nurses play a critical role in facilitating adherence to a treatment regimen. It is my belief that with a broader and deeper understanding of how women cope with a diagnosis of gestational diabetes, nurse clinicians could eventually develop more proactive and effective interventions.

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Appendix A

DISPLAY OF CATEGORY DATA WITH INTERLINKING RELATIONSHIPS

Table A.1

Getting Diagnosed With Gestational Diabetes:

Category Properties and Dimensions

Property (Attribute)	Dimension (Range of Variation Possible)
Perceived threat:	High anxiety—Low anxiety
To self	More—Less
To fetus	More—Less
Timing of diagnosis	Sudden—Expected
Delivery of diagnosis	Sensitive—Insensitive
Past experience with coping	Several tools—None known
Self-perception as capable of mastery	Challenge or growth opportunity —Victim
Regaining a sense of control	Feeling overwhelmed, in emotional crisis—Learning to manage anxiety for sense of control
Accepting “sick” role	Easily—Not easily
Perception of available resources	Many—Few
Social support and effect:	
Health care team:	No effect—Much effect
Primary care physician	No effect—Much effect
OB physician	No effect—Much effect
Covering OB physician at delivery	No effect—Much effect
Certified nurse midwife	No effect—Much effect
Nurse practitioner	No effect—Much effect

Property (Attribute)	Dimension (Range of Variation Possible)
Physician's assistant	No effect—Much effect
Registered nurse	No effect—Much effect
Office reception or billing staff	No effect—Much effect
Nutritionist	No effect—Much effect
Emergency department staff	No effect—Much effect
WIC office staff	No effect—Much effect
Labor and delivery staff	No effect—Much effect
Family	No effect—Much effect
Partner	No effect—Much effect
Friends	No effect—Much effect
Church	No effect—Much effect
Peers with diagnosis	No effect—Much effect
Support group for women with gestational diabetes	None available
Information source and effect:	
Pamphlet from WIC on gestational diabetes	None available
Information from doctor's office	No effect—Much effect
Menus from nutritionist	No effect—Much effect
Internet	No effect—Much effect
Information from library	No effect—Much effect
Information from diabetes center	No effect—Much effect
Book: <i>What To Expect When You're Expecting</i>	No effect—Much effect
Information from other women with gestational diabetes	No effect—Much effect
Newsletter for women with gestational diabetes	None available

Table A.2

*Regaining a Sense of Control:**Category Properties and Dimensions*

Property (Attribute)	Dimension (Range of Variation Possible)
Goal after getting diagnosed with gestational diabetes	Low—High interest in attaining
Social supports	Several—None
Information	Useful—Not useful
Other coping mechanisms	Several—None known
Coping mechanisms used:	
Reading	Useful—Not useful
Surfing the Internet	Useful—Not useful
Pets (enjoyment; care as distraction)	Useful—Not useful
Humor	Useful—Not useful
Venting	Useful—Not useful
Talking with health care team members	Useful—Not useful
Talking with other women diagnosed with gestational diabetes	Useful—Not useful
Venting frustrations	Useful—Not useful
Cognitive coping: learning all they could about diagnosis, treatment, and outcome expectations	Useful—Not useful
Recreational activities	Useful—Not useful
Exercising or not	Useful—Not useful
Eating “correctly” or not	Useful—Not useful
Doing or not doing medically advised treatments	Useful—Not useful
Church-related activities	Useful—Not useful
Maintaining normal activities	Useful—Not useful
Decorating or remodeling house	Useful—Not useful

Property (Attribute)	Dimension (Range of Variation Possible)
Praying	Useful—Not useful
Positive thinking	Useful—Not useful
Listening to music	Useful—Not useful
Doing crafts	Useful—Not useful
Completing puzzles in books	Useful—Not useful
Watching television	Useful—Not useful
Talking on the telephone	Useful—Not useful
Using cigarettes	Useful—Not useful
Using alcohol	Useful—Not useful
Using caffeine	Useful—Not useful
Using Vicodin or other prescribed pain medications	Useful—Not useful
Using illegal substances	Useful—Not useful
Biting fingernails	Useful—Not useful
Journaling	Useful—Not useful
Using relaxation tapes	Useful—Not useful
Seeking reassurance that diagnosis or problems with blood glucose levels were not their fault	Useful—Not useful
Seeking congruence among health care providers	Useful—Not useful
Preparing self for hospital environment	Useful—Not useful
Focusing on the delivery	Useful—Not useful
Planning the kind of parent they want to be	Useful—Not useful
Being in this research study	Useful—Not useful
Reframing the situation	Useful—Not useful
Making a game of it	Useful—Not useful
Viewing the condition as a pregnancy, not a disease	Useful—Not useful
Appraising self-strengths	Useful—Not useful

Property (Attribute)	Dimension (Range of Variation Possible)
Seeking repetition of information from health care team for learning often-complex treatment regimens	Useful—Not useful
Feeling office staff is friendly	Useful—Not useful
Feeling they can talk to health care team members	Useful—Not useful
Feeling listened to and valued as person who “knows something too”	Useful—Not useful
Seeking outside counselors, support groups for other issues	Useful—Not useful
Internalizing medical definition of “blood sugar control”	Lesser degree—Greater degree
Feeling frustrated after reviewing behavior prior to “out of range” blood glucose level, concluding they had done everything right	Lesser degree—Greater degree
Looking for patterns in blood glucose levels, not getting hung up on the individual numbers	Useful—Not useful

Subcategory: Stress

Stress sensation	Increased ability to focus Degree of unpleasantness
Number and severity of associated physical symptoms	Few—Many Degree of unpleasantness
Alleviating conditions or behaviors	Few—Many
Onset, or when noticed	Slow—Quick
Moods	Which ones most affected
Triggers known	Few—Many Specific—Not specific
Prior coping behaviors Types	Few—Many Negative—Positive
Distinguishable patterns to stress sensations	Lesser—Greater amounts of stress

Property (Attribute)	Dimension (Range of Variation Possible)
Subcategory: Perceived threat	
Fear of the unknown	No fears—Several fears
Loss of control	Never—Always
Emotional reaction	Degree of unpleasantness
Expressed concerns or worry	Lesser—Greater degree
Threat of harm to offspring	Lesser—Greater degree of stress
Feeling betrayed by their body	Lesser—Greater degree

Table A.3

*Planning for a Healthier Birth and Beyond:**Category Properties and Dimensions*

Property (Attribute)	Dimension (Range of Variation Possible)
Frame of reference	Pregnancy or disease
Valuing treatments	Degree of cooperation
Perceiving social supports during labor, birthing, and early months after delivery	Accurate perception or not; many or few supports; types of supports
Displaying attachment/bonding behaviors	Few—Many
Concerned for parenting ability	Degree of interest
Willing to make sacrifices to deliver as healthy an infant as possible (<i>mothering</i>)	Degree of interest
Seeing diagnosis as an opportunity to change behaviors now to ward off diabetes later in life	Degree of compliance
Planning to use healthier eating choices and increased activity to positively affect their family even after delivery	Degree of interest
Appreciating women's bodies' capabilities	Lesser degree—Greater degree
Seeking congruence in health care providers' statements	Lesser degree—Greater degree
Seeking advice from friends perceived as knowledgeable	Lesser degree—Greater degree
Building support systems through "researching information"	Lesser degree—Greater degree
Seeking information from other sources	Lesser degree—Greater degree
Having wishes for services, support experiences for other women diagnosed with gestational diabetes in future	Few—Many suggestions
Having wishes for family members of other women newly diagnosed with gestational diabetes in future	Few—Many suggestions

Property (Attribute)	Dimension (Range of Variation Possible)
Having wishes for health care team actions in future	Few—Many suggestions
Willing to seek out “normal” pregnancy experiences	Low—High
Subcategory: Commitment to the fetus’s well-being	
Willing to seek out “normal” pregnancy experiences	Degree of interest
Willing to plan for infant possibly affected by gestational diabetes	Degree of interest
Eating and exercising	Degree of adherence
Self-monitoring blood glucose levels	Degree of adherence
Keeping numerous appointments	Degree of adherence
Checking ketone levels	Degree of adherence
Considering or not considering additional medical interventions	Degree of agreement
Subcategory: Concern for self	
Concerned for mental health	Lesser degree—Greater degree
Concerned for physical health	Lesser degree—Greater degree
Concerned for mental health more than physical to support using negative strategies known to be harmful to health of fetus	Degree of interest

Appendix B

COPING STRATEGIES

Internal Coping Strategies

Journaling and Praying

I've found, especially after I lost the second baby, writing in a journal was very helpful to me as far as coping with everything. So what I do with this journal is, I write down who comes to see me. I tend to write down, too, what my blood sugar levels were when I was tested, what the doctor has to say about certain things, maybe what had happened throughout the night. Like last night I had some back pain, so I would write that in my journal, and write down maybe sometimes things that I was feeling. If I was scared about something or anxious or whatnot, just to write it down and deal with that. I also pray a lot. That seems to help. —Molly

Preparing for the Hospital Environment

I used to go to the hospital library once a week and check out materials around pregnancy, birthing, and parenting. They got to know me. I was a regular. It made coming into the hospital a positive experience. I never liked hospitals or the smells of the cleaners they used. It made me anxious just coming in. I had to do something to prepare myself for delivery. It was kind of a desensitization process, I guess. —Sarah

Using Relaxation or Meditation Tapes; Reading; Exercising

I also have a relaxation tape or a meditation tape. I am not working, so that is a big thing ... I don't have the stress of a job to really make me, you know, "I really have to do this now." I pretty much have the time to do whatever I want. I have the treadmill here when I do exercise. But I really try to take timeout and take a nap, or I will do my relaxation tape or meditation kind of stuff, but that is kind of it ... and reading, and reading up on the baby stuff. It's really fun, actually. —Sarah

Participating in Recreational Activities

I was pretty active, though, both times I was pregnant. I went camping, hiking a lot. —Gail

Being in This Research Study

After I had met with you, it was kind of, like, I'd go home, and I'd be, like, "Okay, let me look at what I'm eating today," that kind of thing. Or I'd make sure I had a snack that day. —Sarah

[After the first interview] I specifically remember walking to the elevator and walking back to my office much more secure. And I knew that I still had a battle ahead of me and I knew that it wasn't over, but at least I felt a connection—that there was someone who could serve as a resource to me—that I could say, "You know, I'm feeling this way, and is this normal?" But, again, just not feeling like I was alone anymore. For the longest time, I felt like I was the only one that I knew of that had had it ... I was just so overwhelmed, it was just like— and I immersed myself in information, and on the one

hand that's really good because I was educating myself, but on the [other] hand that's very bad because the information I'm reading isn't always accurate. It may— I don't know how recent it is; and I just felt such an enormous sense of relief that at least I could tell my part to someone and have someone listen to me and to my frustration and my fear. And it really felt like, you know, I wasn't lost in a crowd, like someone knew how I was feeling about this, and if I got to the other side—when I got to the other side; I knew I'd get to the other side—but when I got to the other side I would be able to look back and see. And I won't forget because of that. You know, it's different; had I not spoken with you about this, I think I would have lost more of it. This just made it so clear to me, you know, how I was feeling, because it was the first time I really sat down and said “Well, you know, you've asked the right questions to really get into the emotional aspect of it.” And what did I want more of? And that was really clear. I wanted to be educated about it. And I really thought back to our conversation many times. When I was put on bed rest at the very end I thought back about it a lot and thought, “Wow,” you know, “this is it! I'm in the home stretch! I hope [the baby]'s doing okay. Everything seems to be okay.”

—Emily

Making a Game of It

They suggested yogurt, and that was working for a while. But lately I've tried a Carbo Solutions bar with only 2 grams of carbs, and they've got like 8 grams of fat and 22 [grams of] proteins. That worked for a couple of days, and then my sugars, my fasting sugars went out of control again. And so I was alternating between those two, seeing if I could kind of play around with it and work. I like to feel in control, but not regimented ...

It's a struggle about every 3 days ... The blood sugar levels change and my routine has to change. —Emily

Reframing the Situation

[I] have to remind myself the diabetes is not getting worse when I have to take more insulin; we're just tweaking. —Emily

Using Diversional Activities

[I use] the bible, novels; puzzle books; journal; and needlepoint, and some entertainment-type gifts ... Most of the gifts have been kind of baby gifts. I'm reading the paper in the morning ... I do receive several phone calls. ... probably anywhere from four to six, sometimes maybe more. —Molly

Fixing up the new house has been a nice distraction. —Monica

Seeking Reassurance That the Diagnosis Is Not Their Fault

[I tell myself,] "It's not you, it's autoimmune deficiency; your body is fighting itself. You're doing your part." —Emily

Appraising Self-Strengths

Personally, I didn't think I had that kind of strength, and I see now that I do and I feel immense empowerment, you know, that I can accomplish a lot more than I thought and I'm a lot stronger. So when I start [saying to] myself, "Oh, I'm tired, I'm this I'm

that,” it’s, like, Oh, Jeez, that’s nothing compared to what you’ve gone through. You can handle this. —Emily

Attributing a Positive Meaning to the Experience

I feel this happened for a reason. I feel like it will make me a better parent. It has made me be more understanding [and] learn more about my developing baby and the pregnancy. I think I am even more excited to see her, and delivery will be more rewarding, to know I worked this hard for her. ... I plan to use this diet and work on myself after. I feel like I got a taste of what I am trying to prevent later in life. ... I don’t want real diabetes. At least I have a chance of never getting it. —Emily

External Coping Strategies

Seeking Congruence Among Health Care Providers

They schedule the appointment a week or so away. I thought that was so that the nutritionist can get the materials together. I just wanted the nutritionist to have talked with my doctor, to at least be on the same page. My nutritionist gave me outdated [e.g., recommending tuna fish when it contained mercury and was contraindicated for pregnant women] and unrealistic meal plans, either because of budget [e.g., salmon] or because of activity level [e.g., fresh fruit cup when participant was ordered on bed rest and had no one to stand at the sink and cut up all the fruit]. —Monica

[The] health care team needs to all agree. When I saw my OB and asked him a question, I went to my diabetes doctor, and then to my diabetes nurse educator, and asked them all the same question, and they all said the same answers. That was important to me. Then I had the strength and courage to stand up to my Ph.D. aunt and tell her I was not going to take this prenatal vitamin with chromium. —Emily

Feeling She Will Be Listened To and Valued

[I want] definitely someone who is going to listen, listen and believe that I actually have knowledge about, some knowledge about when I was in my last delivery. I am not exactly sure who was wheeling me up. I said, “can we just do the paperwork later, because I really need to get upstairs.” ... The response was, “Oh, honey, we have never delivered a baby down here.” Oh, but you have never had me! ... Just listen and don’t push aside either my fears or my knowledge and make me feel like ... I guess just what makes me feel the best is that someone who is ... listening and taking into account either my fears, concerns, my whatevers ... as opposed to, I don’t know, trying to make me feel better by pooh-poohing it right away, I guess. —Haley

Getting Repetition of Information From Health Care Providers

To Ensure Understanding

When I got diagnosed with type 2, my doctor, she’s really great, she set me right up with [home health]. They sent a diabetic nurse to my house for, like, 6 weeks, twice a week, to help me understand the carbohydrates, and everything I needed to know, what you should really do and shouldn’t do. It was a really nice nurse, and she really helped a

lot. To understand how to take care of myself, to figure carbohydrates out and what you shouldn't do. —Gail

Resources Needed for Women With Gestational Diabetes:

Participants' Suggestions

When asked what else would have helped them to cope, some participants described resources they wished had been in place for them, and resources they would want to have available for women diagnosed with gestational diabetes in the future. The following quotes illustrate the ideas of 2 participants for better provider interactions with women diagnosed with gestational diabetes.

They connected with me and remembered me. And that connection just made it easier for me to communicate with them and talk with them about how I'm feeling and therefore, I really set them up to win as well, because if I can be open and honest with where I feel, or how I feel about gestational diabetes and the fears that I have, then they know what they need to address with me and how they can help. So, it's definitely a two-way street, you know. I certainly couldn't have expected this type of interaction if I didn't say anything. They wouldn't have known my needs. But the connection—you hear these stories about doctors just treating you as a case, and I never had that experience at any point during my pregnancy. Never. I was always treated like a person, a woman, a mother to be. Someone with value. [But I definitely needed more] information from the get-go. —Emily

The only thing, the only complaint I would have, is not getting called back right away from the Diabetes Center. And I know it's just because they were understaffed, and they had meetings and that kind of stuff. So, I mean, I knew why, but it was just—having to wait a couple of days just kind of frustrated me. Especially in the beginning, when I had questions.

—Sarah

Support groups, newsletters, and phone buddies were high on the list.

I think it would have been helpful if I did have somebody there, just kinda to talk to. “What are you doing?” and that kind of thing. —Sarah

If there's anything I could ever do to help someone I'll be thrilled to ... I would love to be that person, with the appropriate training, because I certainly wouldn't want to paint it to be such a pretty picture that it's no big deal, because it is very serious. But at the same time I'd like to help them through it, because it's so scary. —Emily

The researcher also asked the participants what health care providers did that was helpful or not helpful. The following is an example of a helpful action.

Every single time I came in contact with any of my care providers they always reinforced what a good job I was doing and how it was best for the baby and how my numbers, while they were still sporadic, erratic, and not always behaving themselves, ... they weren't so out of control that it would affect her long term, other than the fact that she would probably develop gestational diabetes herself. And so I would be very hard on myself if my numbers were in the 130s and I'd done my exercise and I'd

eaten appropriately and been really careful. And they would explain to me ... “It’s not you, it’s autoimmune deficiency, your body is fighting itself. You’re doing your part. That’s why your numbers are not in the 200s anymore.” And just having that reinforcement—I really needed that, because I have a tendency to be really hard on myself. —Emily

Appendix C

NOTICE OF APPROVAL: THE AMERICAN NURSES FOUNDATION



October 9, 2002

Lois Hamel
241 Perkins Ridge Road
Auburn, ME 04210-9135

RE: ID# 2002018
Coping with Gestational Diabetes: What Strategies Do Women Use?

Dear Grant Applicant:

The American Nurses Foundation (ANF) Research Review Committee has completed its review of the applications submitted for consideration in the year 2002 Nursing Research Grants Program. The Research Review Committee was impressed with your application and supportive of your research. However, your application was approved without funding.

Your proposal was independently reviewed by two doctorally prepared experienced nurse researchers - members of the twelve-member panel. We have enclosed the summary critiques intended to provide you with external and objective evaluation of your proposed research. The suggestions are offered in the most constructive manner and the reviewers hope you find their comments helpful as you pursue your research interests.

We strongly encourage you to resubmit your application next year. If you are planning to resubmit your proposal to this program, you will need to include copies of these summary critiques and an explanation of how you have altered the proposal in response.

Thank you for your efforts and diligence. We do appreciate your submitting your application. Should you have any questions, please contact Shirley Porter, Nursing Research Grants Administrator at 202-651-7071. Again, thank you for your interest in the program.

Sincerely,



Leo Schargorodski
Director

Enclosures: Summary Critiques

Appendix D

NOTICES OF APPROVAL WITH FUNDING:

SIGMA THETA TAU INTERNATIONAL



Sigma Theta Tau International, Inc.

HONOR SOCIETY OF NURSING

Kappa Zeta Chapter-at-Large
University of Southern Maine
Saint Joseph's College
University of New England

Central Mailing Address
96 Falmouth Street
P.O. Box 930
Portland, Maine 04103-9300

May 20, 1999

Lois Catherine Hamel, MS, RN, CS-ANP
241 Perkins Ridge Road
Auburn, Maine 04210

Dear Lois:

On behalf of the Scholarship and Research Awards Committee of the Kappa Zeta Chapter-at-Large, it is my pleasure to inform you that your research proposal "What Methods Do Women Diagnosed with Gestational Diabetes Mellitus (GDM) Use to Cope?" has been approved for funding in the amount of five-hundred dollars (\$500).

Committee and board members join me in recognizing the potential significance of your proposed research in furthering our understanding of the methods used by women with gestational diabetes to cope with their diagnosis and its sequelae. We look forward to the analysis and publication of your findings.

In addition, we would like to invite you to present your study findings at a future chapter research conference. We wish you good luck in your research endeavors and look forward to hearing your research findings. I will be asking Marianne Tarraza, Kappa Zeta Treasurer to pay the award directly to you to be applied to your research expenses. You can expect to be receiving a check shortly.

Sincerely,

Noreen Byrne Vincent

Noreen Byrne Vincent, MS, RN
Chairperson, Scholarship and Research Awards Committee



Sigma Theta Tau International, Inc.

HONOR SOCIETY OF NURSING

Kappa Zeta Chapter-at-Large
University of Southern Maine
Saint Joseph's College
University of New England

Central Mailing Address:
96 Falmouth Street
P.O. Box 9300
Portland, Maine 04103-9300

Lois Hamel RN
241 Perkins Ridge
Auburn Me. 04210
May 28, 2002

Dear Lois;

The Research Committee of Sigma Theta Tau would like to offer their sincere congratulations upon being the selectee for the Sigma Theta Tau Research Award for the year 2002. The committee was very impressed with the overall presentation of your proposal and the potential for significant contribution to nursing practice. We were very excited about the potential for this research.

The quality of all the proposals this year has affirmed our determination to be more aggressive in our fund raising in the future so we are able to recognize excellent proposals, such as yours, in the future.

I look forward to the awarding of this grant at the annual meeting.

Sincere wishes for success in your future.

Respectfully

A handwritten signature in cursive script, appearing to read "Nola Huss".

Nola Huss, MSN, RN,C
Chair Research Committee



Sigma Theta Tau International, Inc.

HONOR SOCIETY OF NURSING

KAPPA TAU CHAPTER

The University of Vermont
School of Nursing
216 Rowell Building
Burlington, VT 05405-0068

April 28, 2002

Lois Hamel, PhD(c), RN, CS-ANP
241 Perkins Ridge Road
Auburn, Maine 04210-9135

Dear Lois,

On behalf of the Research and Scholarship Committee of the Kappa Tau Chapter, I am pleased to inform you that you have been selected as the recipient of the 2002-2003 Research Grant. Enclosed is a check for \$1000 to be used to facilitate your efforts to complete your doctoral research, "Coping with Gestational Diabetes: What Strategies Do Women Use?"

Acceptance of this award reflects your agreement to submit a progress report and budget reflecting the use of the funding to the Research Committee by May 1, 2003. We will also expect you to share your research findings at a future Kappa Tau program, either as a poster or presentation.

Congratulations! Do hope you are having a great spring and are enjoying being back in Maine. We miss you here!

Sincerely,

Mary L.

Mary L. Botter, PhD, RN
Chair-Kappa Tau Research Committee

Appendix E

IRB APPROVAL AND RENEWALS:

THE UNIVERSITY OF MAINE

UNIVERSITY OF MAINE – APPLICATION FOR APPROVAL OF RESEARCH WITH HUMAN SUBJECTS

PRINCIPAL INVESTIGATOR: Lois C. (Whitney) Fanel, MS, RN, CS-ANP
 CO-INVESTIGATOR(S): _____
 FACULTY SPONSOR (if any): Mary Ellen Sumanski, Ph.D.
 TITLE OF PROJECT: What Methods do Women Diagnosed with Gestational Diabetes Mellitus (GDM) Use to Cope?
 PROJECT START DATE: Fall, 1999
 PI DEPARTMENT: Indiv. Ph.D. in Adult Health Education
 MAILING ADDRESS: 241 Perkins Ridge TELEPHONE: (207) 783-4240
 FUNDING AGENCY (if any): Pending/ Auburn, ME CONTRACT/GRANT #: _____
 STATUS OF PI (circle one): PI

FACULTY/STAFF GRADUATE UNDERGRADUATE/OTHER _____

- If PI is a student, is this research to be performed:

<u> </u> for an honors thesis?	<u> </u> for a master's thesis?
<u> </u> for a doctoral dissertation?	<u> </u> for a course project?
<u> </u> other (specify) _____	
- Does this application modify a previously approved project? no. If yes, please give title (and assigned number, if known) of previously approved project: _____
- Is this project exempt from further review requirements? . If yes, please give the number of the exemption category (see Policies and Procedures, Section III B2a): _____
- Is expedited review requested? . If yes, please give the number of the review category (see Policies and Procedures, Section III C5a): _____

See instructions on reverse for completing application.

SIGNATURES: All procedures performed under the project will be conducted by individuals qualified and legally entitled to do so. No deviation from the approved protocol will be undertaken without prior approval of the Board.

Faculty Sponsors are responsible for oversight of research conducted by their students. By signing this application page, the Faculty Sponsor ensures that the conduct of such research will be in accordance with the University of Maine's *Policies and Procedures for the Protection of Human Subjects of Research*.

4/23/99
Date

Lois C. Fanel ANP
Principal Investigator

Mary Ellen Sumanski
Faculty Sponsor

Co-Investigator

Co-Investigator

FOR BOARD USE ONLY
ACTION TAKEN:

Application # 99-05-02 Date received 5/7/99

Exempt; category _____
 Approved as submitted. Date of next review: 5/00
 Modifications required. (See attached statement.)
 Not approved. (See attached statement.)

SIGNATURES:
5/12/99
Date

Michael A. Roberts



UNIVERSITY OF MAINE

Office of Research and Sponsored Programs
Protection of Human Subjects Review Board

5717 Corbett Hall
Orono, ME 04469-5717
207 581-1198
FAX 207 581-1160

MEMORANDUM

TO: Lois Hamel
241 Perkins Ridge
Auburn, ME 04210

FROM: Gayle Anderson
Protection of Human Subjects Review Board

SUBJECT: Coping Methods Used by Women Diagnosed
w/Gestational Diabetes Mellitus
Application #: 99-05-02

DATE: 08/22/2000

On 08/21/2000, the Protection of Human Subjects Review Board conducted its annual review of your project referenced above. The Board approved renewal to May 2001.

Thank you.





UNIVERSITY OF MAINE

Office of Research and Sponsored Programs
Protection of Human Subjects Review Board

5717 Corbett Hall
Orono, ME 04469-5717
207-581-1988
FAX 207-581-1116

MEMORANDUM

TO: Lois Hamel
241 Perkins Ridge
Auburn, ME 04210

FROM: Gayle Anderson
Protection of Human Subjects Review Board

SUBJECT: "Coping Methods Used by Women Diagnosed w/Gestational Diabetes Mellitus"
Application #: 99-05-02

DATE: July 22, 2001

On 7/20/2001, the Protection of Human Subjects Review Board conducted its annual review of your project referenced above. The Board approved renewal to May 2002.

Thank you.



Office of Research and
Sponsored Programs
*Protection of Human Subjects Review
Board*



5717 Corbett Hall
Orono, Maine 04469-5717
Tel: 207-581-1498
Fax: 207-581-1446
www.orsp.umesp.maine.edu/ethical.asp
www.umaine.edu

MEMORANDUM

TO: Lois Hamel
241 Perkins Ridge
Auburn, ME 04210

FROM: Gayle Anderson
Assistant to the Institutional Review Board (IRB) for the Protection of
Human Subjects

SUBJECT: "Coping Methods Used by Women Diagnosed w/Gestational Diabetes
Mellitus," #99-05-02

DATE: May 31, 2002

Dr. Jeff Hecker, Chair of the Institutional Review Board for the Protection of Human Subjects (IRB), approved renewal of the above referenced project through an expedited review. **The approval period is now 5/30/2002 through 5/11/2003.** The next continuing review of this project must be conducted by the IRB before the end of the approval period, and you will receive a request for review information approximately 6-8 weeks before that date.

Given that this study is also approved through St. Mary's and Maine Medical Center, and they stamped the informed consent forms, I did not stamp them approved from the University of Maine this time. It seemed confusing to have different approval and expiration dates stamped on the same document, and we will defer to their approval of the consent forms. Since you conduct the research at their hospitals, you would have to abide by their dates. I am sending you back copies without our stamp, but still showing their current dates. If you have any questions, please contact me at the above number or e-mail gayle@maine.edu. By trying to simplify things, I hope I haven't made things more confusing!

If you have any questions, please contact me at 1-1498. Thank you.

pc: Mary Ellen Symanski

Appendix F

IRB APPROVAL AND RENEWALS:

MAINE MEDICAL CENTER



MAINE MEDICAL CENTER RESEARCH INSTITUTE
OFFICE OF RESEARCH ADMINISTRATION

July 26, 1999

Lois C. Hamel, ANP
Department of OB/GYN
Maine Medical Center

Dear Ms. Hamel:

I am pleased to inform you that I am able to grant Expedited Approval of your consent document and protocol entitled (#1618) What Methods Do Women Diagnosed with Gestational Diabetes Use to Cope? according to federal regulation 45 CFR 46.110(8a). I understand that the primary goal of this study is to better understand from a pregnant woman's perspective, the process of living with gestational diabetes so that health providers can better support the needs of this population. A copy of the approved consent is enclosed for use in this study.

Before a patient can be entered into this project, he/she must sign and be given a copy of the informed consent document. The original consent form should be kept in your office files, available for review for up to three years from the date of termination of the project.

Please be advised that we will require a brief review of this project within one year. A progress report will be sent to you at the appropriate time.

This action will be brought before the full Board for their sanction at its meeting on August 31, 1999. Minutes of that meeting will be sent to you for your records when available. Also, all IRB approvals are subject to review by the Executive Committee of the Medical Staff.

If you have any questions now, or as this study progresses, please don't hesitate to contact our office at 842-7137.

Sincerely yours,

Kenneth A. Ault, M.D.
Chairman, IRB

KAA:jlt

Enc.



MAINE MEDICAL CENTER RESEARCH INSTITUTE
OFFICE OF RESEARCH ADMINISTRATION

**INSTITUTIONAL REVIEW BOARD
APPROVAL FOR CONTINUATION OF A RESEARCH STUDY**

To: Lois C. Hamel ANP

00000

From: Kenneth A. Ault M.D.
Chairman, IRB
Jan Trott
IRB Coordinator

Date: June 27, 2000

Re: What Methods Do Women Diagnosed with Gestational Diabetes Use to Cope?

IRB#: 1618

Status Active Follow-up Inactive

I am pleased to inform you that at its meeting on 25-Jul-00 the Maine Medical Center Institutional Review Board reviewed and approved or sanctioned the continuation of the above named research project.

This approval is in effect until 25-Jul-01

Failure to obtain re-approval from the Board by this date will result in the termination of this project.

If your project is still active, the Board has approved or sanctioned the use of this project's related consent document unless it met the exemption according to 46.117(c). Be sure that each subject signs and is given a copy of the consent document prior to entering the study. A copy should be kept in your office files, available for review up to three years after the termination of the study. A copy should also be kept in each patient's chart.

You are reminded that the IRB must approve all changes to the protocol and/or informed consent document. If any adverse reactions occur during this study, you must notify the IRB office immediately.

The Institutional Review Board granting this approval is in compliance with the regulations of the Food and Drug Administration as defined in 21 CFR, Part 56, and the regulations of the Office for Protection from Research Risks as defined in 45 CFR 46.



MAINE MEDICAL CENTER RESEARCH INSTITUTE
OFFICE OF RESEARCH AFFAIRS

To: Lois Hamel ANP
241 Perkins Road
Auburn ME 04210

Attention:
Re: Notice of Renewal Approval

IRB#: 1618
**What Methods Do Women Diagnosed with
Gestational Diabetes Use to Cope?**

Date 01/29/02

This is to inform you that on 1/29/02 the Maine Medical Center IRB has renewed its approval of the above research study.

The approval period is from 1/29/02 to 1/29/03. Your study number is 1618. Please be sure to reference this number and the study title in any correspondence with the IRB.

All conditions for continued approval during the prior approval period remain in effect. These include, but are not necessarily limited to the following requirements:

- Before a patient can be entered into this project, he/she must sign and be given a copy of the informed consent document. The original consent form should be kept in your files, available for review for up to three years from the date of termination of the project. A copy should be kept in the patient's chart.
- All protocol amendments and changes to approved research must be submitted to the IRB and not be implemented until approved by the IRB except where necessary to eliminate apparent immediate hazards to the study subjects.
- Advertisements, letters, Internet postings and any other media for subject recruitment must be submitted to IRB and approved prior to use.
- Significant changes to the study site and significant deviations from the research protocol must be reported.

- Please complete and submit reports to the IRB as follows:

Renewal of the study - complete and return the Progress Report 4-6 weeks prior to the expiration of the approval period. The study cannot continue after **1/29/03** until re-approved by the IRB.

Completion, termination, or if not renewing the project - send the report upon completion of the study.

Please call our office if you have any questions about the terms of this approval (Kristen Sullivan, 207-885-8195).



Kenneth Ault, M.D., IRB Chairperson

Copy: File



MAINE MEDICAL CENTER RESEARCH INSTITUTE
OFFICE OF RESEARCH AFFAIRS

To: Lois Hamel ANP
241 Perkins Road
Auburn ME 04210

Re: Notice of Renewal Approval

IRB#: 1618

**What Methods Do Women Diagnosed with
Gestational Diabetes Use to Cope?**

Date: 01/28/03

This is to inform you that on **01/28/03** the Maine Medical Center IRB has renewed its approval of the above research study.

The approval period is from **01/28/03** to **01/28/04**. Your study number is **1618**. Please be sure to reference this number and the study title in any correspondence with the IRB.

All conditions for continued approval during the prior approval period remain in effect. These include, but are not necessarily limited to the following requirements:

- All protocol amendments and changes to approved research must be submitted to the IRB and not be implemented until approved by the IRB except where necessary to eliminate apparent immediate hazards to the study subjects.
- Advertisements, letters, Internet postings and any other media for subject recruitment must be submitted to IRB and approved prior to use.
- Significant changes to the study site and significant deviations from the research protocol must be reported.

Research Compliance - IRB / IACUC / Biosafety - (207) 885-8183 - Fax (207) 885-8141
Grants & Contracts Administration / Medical Research Committee - (207) 885-8184 - Fax (207) 885-8141
81 Research Drive, Scarborough, Maine 04074-7205

The MaineHealth® Family

- Please complete and submit reports to the IRB as follows:

Renewal of the study - complete and return the Progress Report 4-6 weeks prior to the expiration of the approval period. The study cannot continue after 01/28/04 until re-approved by the IRB.

Completion, termination, or if not renewing the project - send the report upon completion of the study.

Please call our office if you have any questions about the terms of this approval (Kristen Sullivan, 207-885-8195).



Kenneth A. Ault, M.D., IRB Chairperson

Copy: File

Appendix G

IRB APPROVAL:

ST. MARY'S REGIONAL MEDICAL CENTER

ST. MARY'S REGIONAL MEDICAL CENTER
INSTITUTIONAL REVIEW BOARD
P.O. Box 291 Campus Ave.
Lewiston, Maine 04243-0291
Tel # 207-777-8388 Fax# 207-777-8391

Date: February 27, 2002 Investigator: Lois Hamel, ANP

Protocol #

Request Type: Initial Approval of Protocol & Patient Inform Consent

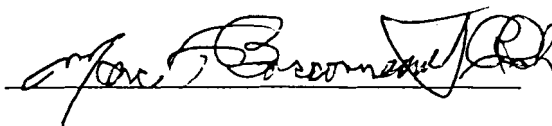
Title: What Methods Do Women Diagnosed with Gestational
Diabetes Use to Cope?

The request has been reviewed and approved by the IRB in accordance with
FDA guidelines for IRB's on:

Date: 2/27/02 _____ Full IRB review
XXX Expedited review

Comments: Approval expires 2/27/03.
Please submit annual report by 2/01/03 if study is to extend beyond
12 months. Please submit completion or termination of study report
at end of study.

Marc F. Boissonneault, R.Ph.
IRB Chair



Appendix H

HUMAN RESEARCH SUBJECTS INFORMED CONSENT

UMAINE IRB
APPROVED

Human Research Subjects Informed Consent

DATE 7/20/01
EXPIRES 7/20/02

Maine Medical Center
Human Research Subjects Informed Consent

What Methods Do Women With Gestational Diabetes
Use to Cope?

Principal Investigator: Lois C. Hamel, MS, RN, CS-ANP, a full-time graduate student at the University of Maine, Orono and a practicing Adult Nurse Practitioner.

Purpose of Study

The purpose of this research study is to better understand from a pregnant woman's perspective the process of living with gestational diabetes, so that nurses and providers of health care, can better support and meet their needs.

Procedures

I understand that all women who have been diagnosed with gestational diabetes and are preferably still pregnant are eligible. If I did not have diabetes between pregnancies and was diagnosed with this one as well, then I still qualify. If, however, I had diabetes before pregnancy, or it never subsided between pregnancies then I do not qualify for this study.

If I agree to participate in this study, I understand I will be interviewed for approximately one hour by the researcher. Any interviews will be audiotaped to ensure accuracy, and I may refuse to answer any of the questions or terminate the interview at anytime. I understand my ability to receive health services will not be in any way affected by my decision to terminate the interview.

I also agree/do not agree (PLEASE CHOOSE ONE) to allow Lois Hamel to examine my chart/record, if one is available, either through Maternal/Fetal Medicine or the Diabetes Center. This is not the main part of the study and is used only for additional information.

Risk and Discomfort

There are no physical risks to me as a result of this study. I may experience some emotional discomfort as a result of sharing some potentially difficult personal feelings. I understand that if I become upset during the interview and feel a need to talk with someone after the interview is concluded, I will be referred to a social worker or private counselor.

Benefits

There are no direct benefits to me as a result of being in this study, however, I may find it beneficial to be able to tell my story and contribute to the holistic view of living with gestational diabetes. I may find it helpful knowing the information coming from this research study will be shared with other women, other gestational diabetics, and the nurses and health care professionals who work with these women worldwide.

Cost Payment

Participation in this study will not cost me anything, nor will I receive any compensation.

Confidentiality

I understand I have a right to confidentiality and the researcher will keep my name, phone number and the audiotapes in a locked drawer until the conclusion of the project and all will be destroyed after Maine Medical Center Institutional Review Board's (IRB) minimum time passes. At no time will my name be associated with the data collected, nor will my name be used in any subsequent publications of the research findings. Also, I understand that the researcher will not share my name with anyone else without my permission. Likewise, I will not share the specific contents of my taped discussions with any other potential participant in this study.

DATE APPROVED

01-29-02

VOLUNTEER STATEMENT

- I understand that I enter this project voluntarily and that I may withdraw from it at any time without loss of benefits to which I might otherwise be entitled.
- I understand that MMC provides no institutional benefit or financial compensation, including payment of expenses associated with medical treatment, for any injury arising from or attributable to this research.
- I understand that my name will not be used in any publication resulting from the research without my explicit permission.
- I understand that all tests and services specifically required by this research will not be charged to me or my third party payors unless the tests and services are clinically indicated or are part of the standard therapy for treatment of my illness.
- I understand that all records relative to the research will be treated in confidence, being available only to the investigators, the drug or device manufacturer sponsoring the research study, or agents of the federal government who oversee research involving human subjects.
- I understand that if I have any questions relating to this project or if I/we wish to report any research related injury; that I am free to contact Lois Hamel, Ph.D.(c), RN, CS-Adult Nurse Practitioner (763-4849), or if I have any questions relating to human subject research I am free to contact Dr. Kenneth Ault (842-7137), Chairman of the Maine Medical Center Institutional Review Board.

I, _____, have read this consent and understand its contents. Pertinent questions have been answered by the researcher. I will be given a copy of this consent. My signature below indicates my consent to participate.

Signature of Participant

Date

I, _____, have fully explained to _____ the nature and purpose of the procedures described above any risks.

Signature of the Researcher

Date

A copy of this consent form must be given to each subject entering the study. Signature of the witness is necessary only when the person signing the consent is other than the subject.

JAN 29 2003

Appendix I

SURVEY INSTRUMENT

Survey Instrument

Demographic Data

What fictitious first name would you like to be called?

Age: _____ yrs

Time since diagnosis of gestational diabetes: _____ Days/Weeks/Months/Years (circle one)

When is your due date: _____ Or when did you deliver?

Anyone available to you for support? Y N

What relationships are they to you?

Background Information about the study:

I am interested in hearing about pregnancies complicated with the diagnosis of Gestational Diabetes. I wish to hear "what is it like?" This is your opportunity to be involved in a project that will help nurses understand women diagnosed with gestational diabetes better. It is my hope that one day we will improve our care for these women. These are examples of questions you may be asked:

Tell me about the time since you were diagnosed with gestational diabetes?
What has changed about your life? Describe a typical day.

What was a memorable event or an example relating to your experience with gestational diabetes?

What has helped you to cope with this diagnosis?

What things have you found other people have done that were helpful? Not helpful?
Has your diagnosis had any effect on your relationships with other people, especially with family or your significant other? Any groups you belong to?

What has your interaction with your health care provider or team been?
What things have your health care providers done that were helpful? Not helpful?
Does this feel more like a pregnancy or a disease to you?

What do you suppose is unique about dealing with gestational diabetes as opposed to regular diabetes?

How do you perceive the diagnosis of diabetes affecting life after pregnancy?
What will your continued ability to deal with this diagnosis depend upon?

BIOGRAPHY OF THE AUTHOR

Lois C. Hamel was born in Farmington, Maine. She was raised in New Vineyard, Maine, and graduated from Mt. Blue High School in 1983. She received a Bachelor of Science degree in Nursing with distinction in 1987 from The University of Maine. After working as a registered nurse in both maternity and medical-surgical areas, she entered graduate school. Ms. Hamel received a Master of Science degree in Adult Health Nursing with high honors in 1994 from the University of Southern Maine, where she was awarded a Professional Nurse Traineeship Grant and inducted into the nursing honor society, Sigma Theta Tau International.

In 1994 Ms. Hamel joined the Westbrook College faculty as an Assistant Professor, teaching primarily maternal-newborn and gerontologic content. While at Westbrook College, which later became the Westbrook Campus of the University of New England, she was granted a full scholarship to the Adult Health Primary Care Nurse Practitioner Certificate of Advanced Degree program, a weekend course of study offered by Simmons College in partnership with the University of New England. Ms. Hamel received National Certification as an Adult Nurse Practitioner in 1998, along with DEA prescriptive authority, and was granted full approval to practice by the Maine State Board of Nursing.

Ms. Hamel left teaching from 1998 to 2001 to pursue full-time doctoral studies and to resume her clinical practice on a part-time basis as a nurse practitioner with the Maine Women's Surgery & Cancer Center. She has since returned to academia but is able to maintain a clinical practice averaging 5 hours a week. This part-time work as a

nurse practitioner has most recently involved consulting to nursing homes for Specialized Health Management, Inc., of Newton, Massachusetts, and seeing patients on a per diem basis for Planned Parenthood of Northern New England. Ms. Hamel has formally accepted a tenure-track faculty position at the University of Southern Maine, College of Nursing and Health Professions, contingent on receiving the Doctor of Philosophy degree. She plans to teach and conduct research at the Portland campus of the University of Southern Maine while maintaining her clinical skills through continued part-time clinical practice.

Ms. Hamel is active in several professional organizations, including Sigma Theta Tau International, where she served as faculty counselor and community counselor for the Kappa Zeta Chapter-at-Large. She is a past president of the Westbrook College Nursing Honor Society and served on the education committee of the Maine State Nurses Association. She is also a member of the American Nurses Association; the Association of Women's Health, Obstetric, and Neonatal Nurses; the Maine Nurse Practitioner Association; the Oncology Nursing Society, Southern Maine Oncology Nursing Chapter; and the New England Area Consortium of Gynecological Oncology Nurses, for which she wrote the IRB proposal for their first collaborative project.

Ms. Hamel was nominated for Teacher of the Year in three of the four years she taught at Westbrook College-University of New England. She was a recipient of a March of Dimes volunteer award in 1996 and has also received awards for outstanding service from Sigma Theta Tau International, Kappa Zeta Chapter-at-Large, for leadership and for her roles as community and faculty counselor. She is listed in *Who's Who in American Nursing* (6th ed.) and *Who's Who in American Healthcare and Medicine* (2nd ed.).

Ms. Hamel has written two chapters for nursing textbooks: “Family Context in Nursing” (1999) in P. A. Potter and A. G. Perry (Eds.), *Basic Nursing: Theory and Practice* (4th ed., pp. 331–344), St. Louis, MO: Mosby; and “Caring in Families” (2000) in P. A. Potter and A. G. Perry (Eds.), *Fundamentals of Nursing* (5th ed., pp. 139–153), St. Louis, MO: Mosby. She has also been invited to suggest revisions to textbook chapters and to read book proposals.

Ms. Hamel has served as a second reader of master of science candidate theses for the Simmons-Westbrook Nurse Practitioner Partnership program and has also been an advisory board member for a major grant from the National Institutes of Health. She makes frequent presentations for pharmaceutical companies and to professional organizations at the state and national level.

Ms. Hamel is a candidate for the Doctor of Philosophy degree individualized in Adult Health Education from The University of Maine in August, 2003.
